

INDIAN INSTITUTE OF SCIENCE  
BANGALORE.

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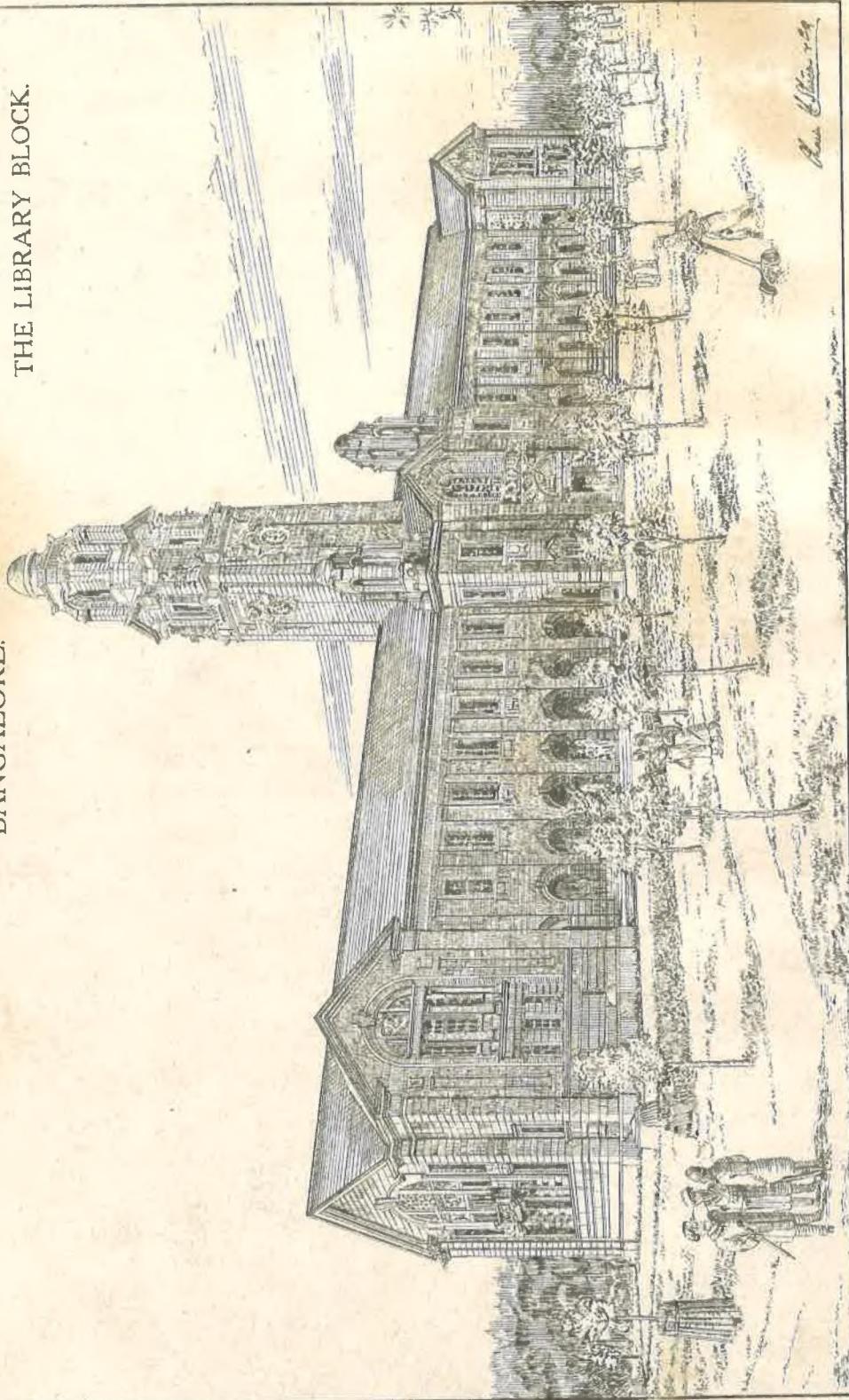


Photo Etching

# Indian Institute of Science,

BANGALORE, INDIA.

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## **INDIAN INSTITUTE OF SCIENCE, BANGALORE.**

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### **Patron.**

His Excellency the Viceroy and Governor-General of India.

### **Vice-Patrons.**

His Excellency the Governor of Madras.

His Excellency the Governor of Bombay.

His Honour the Lieutenant-Governor of Bengal.

His Honour the Lieutenant-Governor of the United Provinces.

His Honour the Lieutenant-Governor of the Punjab.

His Honour the Lieutenant-Governor of Burma.

His Honour the Lieutenant-Governor of Eastern Bengal and Assam.

The Chief Commissioner, Central Provinces.

The Agent to the Governor-General and Chief Commissioner, North-West Frontier Province.

The Chief Commissioner of Coorg.

The Chief Commissioner of Ajmer-Merwara.

The Agent to the Governor-General, Baluchistan.

### **Director.**

Morris W. Travers, Esq., D.Sc., F.R.S.

**Court of Visitors.**

- |                                                                  |                                                                                                                                                                                                                                                                                 |
|------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1) Nominated by the Government of India.                        | The General Officer Commanding the Secunderabad Division.                                                                                                                                                                                                                       |
|                                                                  | The Accountant-General, Madras.                                                                                                                                                                                                                                                 |
| (2) Nominated by the Government of H. H. the Maharaja of Mysore. | The Inspector-General of Education, Mysore State.                                                                                                                                                                                                                               |
|                                                                  | V. P. Madhava Rao, Esq., C.I.E.                                                                                                                                                                                                                                                 |
| (3)                                                              | Sir D. J. Tata, Kt.                                                                                                                                                                                                                                                             |
| (4)                                                              | R. J. Tata, Esq.                                                                                                                                                                                                                                                                |
| (5) Nominated by Sir D. J. Tata and R. J. Tata, Esq.             | B. J. Pádsháh, Esq.<br>R. Row, Esq., M.D., D.Sc.                                                                                                                                                                                                                                |
| (6) & (7)                                                        | *****                                                                                                                                                                                                                                                                           |
| (8) Nominated by His Excellency the Patron.                      | The Hon'ble Mr. M. Hammick C.S.I., C.I.E.<br>The Hon'ble Sir John W. P. Muir-Mackenzie, K.C.S.I., M.R.A.C.<br>The General Officer Commanding, Southern Army.<br>The Minister of the Hyderabad State.<br>The Minister of the Baroda State.<br>The Dewan of the Travancore State. |
| (9) Nominated by the Vice-Patrons :                              |                                                                                                                                                                                                                                                                                 |
| By His Excellency the Governor of Madras.                        | The Director of Industries, Madras Presidency.                                                                                                                                                                                                                                  |
| By His Excellency the Governor of Bombay.                        | The Hon'ble Mr. Justice Dinshaw Dhanjibhai Davar, Bar.-at-Law.                                                                                                                                                                                                                  |
| By His Honour the Lieut.-Governor of Bengal                      | Maharaja Manindra Chandra Nandi of Cossimbazar.                                                                                                                                                                                                                                 |
| By His Honour the Lieut.-Governor of the United Provinces.       | The Hon'ble Rai Sundar Lal Bahadur, B.A., C.I.E.                                                                                                                                                                                                                                |
| By His Honour the Lieut.-Governor of the Punjab.                 | The Official Member representing the Government of the Punjab on the Imperial Legislative Council.                                                                                                                                                                              |

By His Honour the Lieut.-Governor of Burma.	Col. W. G. King, C.I.E., I.M.S.
By His Honour the Lieut.-Governor of Eastern Bengal and Assam.	F. W. Strong, Esq., I.C.S.
By the Chief Commissioner, Central Provinces.	Rao Bahadur Ranganath Narasingh Mudholkar.
By the Agent to the Governor-General and Chief Commissioner, North-West Frontier Province.	D. B. Spooner, Esq., P.H. D.
By the Chief Commissioner of Coorg.	R. D. Tipping, Esq.
By the Chief Commissioner of Ajmer-Merwara	C. W. Waddington, Esq., C.I.E.
By the Agent to the Governor-General, Baluchistan.	Khan Bahadur Burjorji Dorabji Patel, C.I.E.
(10) <i>Ex Officio.</i>	The Director-General of Education in India.
	The Director of Public Instruction, Madras.
	The Director of Public Instruction, Bombay.
	The Director of Public Instruction, Bengal.
	The Director of Public Instruction, United Provinces.
	The Director of Public Instruction, The Punjab.
	The Director of Public Instruction, Burma.
	The Director of Public Instruction, Eastern Bengal and Assam.
	The Director of Public Instruction, Central Provinces.
(11) <i>Ex Officio.</i>	Prof. Morris W. Travers, D.Sc., F.R.S., Director, Indian Institute of Science.
	Prof. Alfred Hay, D.Sc., M.I.E.E.
	Prof. Norman S. Rudolf, M.Sc., F.I.C.

(12) Nominated by the Senates  
of the Indian Universities :

By the University of Calcutta. Prof. P. C. Ray, D.Sc., PH.D.

By the University of Bombay. The Rev. Dr. D. Mackichan, M.A.,  
D.D., LL.D.

By the University of Madras. W. H. James, Esq., B.Sc., A.M.I.C.E.

By the University of Al l a h a -  
bad. A. W. Ward, Esq., M.A.

By the University of The Pun-  
jab. A. S. Hemmy, Esq., B.A.

(13) Nominated by the Council of  
the Indian Institute of Science.

N. Annandale, Esq., D.Sc., B.A.,  
C.M.Z.S.

The Hon'ble Dr. Ramkrishna  
Gopal Bhandarkar, M.A., PH.D.,  
LL.D., Hon. M.R.A.S., C.I.E.

Col. S. G. Burrard, R.E., F.R.S.

W. M. Haffkine, Esq., PH.D., C.I.E.

The Hon'ble Sir Lawrence Hugh  
Jenkins, K.C.I.E., M.A.

G. T. Walker, Esq., M.A., SC.D.,  
F.R.S.

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H. J. Bhabha, Esq., M.A.

The Hon'ble Mr. A. G. Bourne, M.A., D.Sc., F.R.S., C.I.E.

The Director of Industries, Madras.

The Hon'ble Mr. S. M. Fraser, C.I.E., I.C.S.

Prof. Alfred Hay, D.Sc., M.I.E.E.

B. J. Padshah, Esq.

Prof. Norman S. Rudolf, M.Sc., F.I.C.

Prof. Morris W. Travers, D.Sc., F.R.S.

Gilbert T. Walker, Esq., M.A., Sc.D., F.R.S.

**Senate.**

The Director, *Chairman*.

Prof. Alfred Hay, D.Sc., M.I.E.E.

Prof. Norman S. Rudolf, M.Sc., F.I.C.

**Standing Committee of the Court of Visitors.**

The Hon'ble Mr. M. Hammick, C.S.I., C.I.E., *Chairman*.

The Accountant-General, Madras.

V. P. Madhava Rao, Esq., C.I.E.

R. Row, Esq., M.D., D.Sc.

**Board of Management of the Bombay Properties.**

The Collector of Bombay.

A. J. Bilimoria, Esq.

Navroji Jebangir Gamadia, Esq.

**Resolution of the Government of India, Home Department,  
Nos. 434-448, dated Simla, the 27th May 1909, on the  
Establishment of the Indian Institute of Science.**

The Indian Institute of Science owes its origin to the foresight and munificence of Mr. Jamsetjee Nusserwanjee Tata, who some time in 1896 conceived the idea of vesting in Trustees certain houses and landed property in the city of Bombay representing a capital of thirty lakhs of rupees, in order that the net income, estimated at about Rs. 1,25,000, might be applied towards the endowment of a Research Institute for India. The proposal was discussed in England and in India ; a Provisional Committee presided over by the Vice-Chancellor of the Bombay University was nominated by Mr. Tata to promote it ; and it was laid before Lord Curzon by a deputation, which waited upon him on 31st December, 1898, the day after he had landed in Bombay. It was first brought officially to the notice of the Government of India towards the end of March, 1899. The scheme then assumed the form, stated to be provisional, of an Imperial Teaching University, destined to promote original investigations in all branches of learning and to utilize them for the benefit of India, and empowered to confer degrees on Indian graduates who completed their studies with credit, and to select the best students for further training in Europe and America. The subjects proposed for research were distributed, according to the original plan, among three departments :—

- (1) a Scientific and Technical Department, embracing Physics and all branches of Chemistry, including its application to Agriculture, Arts, and Industry,
- (2) a Medical Department, dealing with Bacteriology, Hygiene, and Physiological and Bacteriological Chemistry ; and
- (3) a Philosophical and Educational Department, including methods of Education, Ethics and Psychology, Indian History and Archæology, Statistics and Economics, and Comparative Philology.

This comprehensive course of studies was to be taught by a large staff of highly qualified professors selected by a committee of experts in England, and the scheme contemplated the provision of laboratories, museums, libraries and scientific apparatus on a liberal scale. The initial outlay was estimated at Rs. 13,10,000, subsequently raised to 15 lakhs, and the annual cost of maintenance, after the Institution had been fully equipped, at Rs. 3,00,000 or £20,000. To meet these requirements the only resources available were Mr. Tata's endowment of thirty lakhs, the

capital of which could not be spent, while the income of a lakh and a quarter, which it was estimated to yield, covered less than half of the estimated recurring expenditure, made no provision for scholarships and fellowships, and was burdened by certain further obligations. The Provisional Committee therefore asked for an expression of the general approval of the Government of India in order to enable them to collect funds throughout India in support of the objects of the University.

2. The careful examination of the scheme then undertaken disclosed that it contemplated legislation by the Government of India to empower the proposed University to undertake for all time the management of numerous houses and tenements in Bombay, valued at about sixty lakhs of rupees, under an obligation to devote half of the income to the purposes of the University, and to distribute the other half among certain relatives of Mr. Tata and their descendants in the male line. On grounds of public policy, Lord Curzon's Government were unable to accept the proposal to combine with the institution of a University the creation of a private settlement in perpetuity. Mr. Tata was accordingly informed that, while fully conscious of the generous spirit which animated his offer of thirty lakhs towards the endowment of a Research Institute and of the general utility of the scheme, subject to certain modifications, the Government of India had nevertheless been reluctantly compelled, after consulting the Secretary of State, to come to the conclusion that they could not accept the offer so long as it was accompanied by the condition of a family settlement. In August 1899 Mr. Tata acquiesced in this decision and agreed to offer the University endowment "free from any stipulation as to personal or family advantage." The Government of India suggested to him that he should consult the Provisional Committee, and submit a definite scheme for carrying out the purposes of his endowment, revised in the light of opinions and criticisms which he had received. He was asked to consider whether the original scheme was not too ambitious, and whether it might not be proceeded with so far as funds permitted, leaving further development and perfection to come with the growth of income. Finally, with the object of clearing up doubtful points and bringing matters to an early conclusion, he was invited to discuss the revised scheme personally with the Government of India, either in Simla or Calcutta as might be most convenient to him. Accordingly in October 1899 Mr. Tata met at Simla a small Conference of educational experts from all parts of India, presided over by Sir Thomas Raleigh. This Conference defined the general principles to be kept in view in launching the scheme; they pronounced in favour of its gradual development; they considered the question of site and recommended Bangalore; they drew up a Bill to

incorporate an "Indian Research University" endowed with the immoveable properties offered by Mr. Tata, and they asked the Government of India to express a favourable opinion on the scheme, and to give a promise of the necessary legislation, so that an appeal might be made to the public for funds and the details of the scheme definitely settled. In a resolution of 17th November, 1899, the Government of India published the principal papers relating to the scheme for general information, and recorded their views on the subject in the following words :—

"The Government of India accept the recommendation of the Conference, and they desire to place on record their appreciation of the generosity and public spirit displayed by J. N. Tata in making his munificent offer of an endowment for the proposed University of Research. They are confident that the proposed University will meet a great need, and will contribute to the advancement of higher education and the development of the resources of the country. They will be ready to proceed to legislation as soon as the scheme has been matured in all its details, and they wish the undertaking every success."

At the same time the Government of Bombay were asked to nominate an officer to arrange with Mr. Tata for the transfer of the property with which he proposed to endow the University.

3. In order to secure competent guidance in maturing the scheme, the Provisional Committee invited Professor Sir William Ramsay of University College, London, to come out to India to advise them as to the lines to be followed. Sir William Ramsay spent two months in India, during which time he visited a number of educational and technical institutions, made a variety of enquiries bearing on the question of encouraging research, and wrote an interesting report on the subject referred to him. He was much impressed by the points of doubt indicated by Lord Curzon to the deputation which waited on him in December 1898, namely :—

- (1) whether qualified students would come to the Institute to be trained in scientific methods, and
- (2) whether, when such students had been trained, any posts would be available for their subsequent employment.

As to the first point, Sir William Ramsay found that students would not come of themselves to undergo training in research, but must be attracted by the offer of liberal scholarships of Rs. 40 or Rs. 50 a month. In regard to the second he satisfied himself that there was "no outlet for scientifically trained men in India," and that employment could only

be provided for the students by embarking on the large and highly speculative enterprise of creating new industries, in which they should hereafter take part as proprietors, managers, scientific consultants, or operatives. His scheme accordingly contemplated, not only the teaching of General Chemistry, Engineering Technology, Electric Technology combined with General Physics, and Industrial Bacteriology, but also the development of new industries by means of experimental works to be started in connection with the Institute by the members of the teaching staff assisted by the students. He recommended the location of the Institute at Bangalore, not merely on grounds of climate and because the Mysore Government had offered a convenient site, but also because the locality was advantageously situated with reference to the distribution of the various natural products which the Institute would set itself to develop. Lord Curzon's Government were of opinion that the idea of combining in one institution, and entrusting to a single staff of Professors, both the teaching of science and the experimental development of new industries, was open to the obvious criticism that these two objects were in no way connected with one another, and might indeed be regarded as almost irreconcilable. The former requires the speculative faculties of the student; the latter depends for its success on the practical instincts of the man of business. For this reason, and also on financial grounds, the Government of India were unable to accept Sir William Ramsay's scheme. They deprecated starting work on too large a scale, and they deputed Professor Masson of Melbourne and Lieutenant-Colonel Clibborn, Principal of the Rurki College, to draw up a less ambitious plan susceptible of expansion according to circumstances.

4. In December 1901 Professor Masson and Colonel Clibborn submitted their report to the Provisional Committee. They recommended that the Institute should be devoted to experimental science, and should aim at training students in experimental methods, carrying on original research, and discharging the functions of an accepted authority and referee on all scientific problems arising within its own domain. With these general objects it was to be divided into three distinct schools, each with its own building and equipment—a school of Chemistry, a school of Experimental Physics, and a school of Experimental Biology in which physiological and bacteriological work would be done. They put aside as impracticable Sir William Ramsay's proposal that the Institute should attempt to found and develop new industries. As regards the site, they stated the arguments for Bangalore and Rurki respectively, and expressed a decided opinion in favour of Rurki, provided that land and money for the buildings could be obtained without encroaching on the sum prescribed by

Mr. Tata. They contemplated an initial expenditure of Rs. 6,57,600 on buildings and equipment and an annual outlay of Rs. 1,50,000, which might be raised to Rs. 1,65,750 by fixing the salaries of the professors at higher rates. Subject to the consideration of certain points of detail, the Provisional Committee expressed their general approval of the report and recommended it to "the most favourable consideration of the Government of India." They forwarded an extract of a letter from the Mysore Government offering to place at the disposal of the Committee a site of 371 acres at Bangalore, promising a contribution of five lakhs of rupees for buildings, and undertaking to have the work done under the supervision of their Public Works Department officers, and intimating that a further communication would be made on the subject of an annual grant. In view of these concessions the Committee were strongly in favour of the location of the Institute at Bangalore. On the 19th February 1902 the Government of India accepted the opinion of the Provisional Committee on all the larger questions raised in the report, and undertook to communicate with the Mysore Durbar as to the terms on which the land should be occupied. The point was settled in May 1902 by the Mysore Government undertaking to cede jurisdiction over the site proposed for the Institute on the terms which regulate the administration of the Civil and Military station of Bangalore. Two months later the Mysore Durbar informed the Provisional Committee of their decision to give the Institute an annual grant of Rs. 30,000 for a period of ten years. Lord Curzon's Government undertook to grant a subsidy of a similar amount, thus raising the income of the Institute to Rs. 1.85,000, a sum exceeding the highest estimate framed by Sir William Ramsay.

5. The question then remained of determining the value of the Tata properties, as to which there had been some difference of opinion between Mr. Tata and the officers of the Bombay Government who had been deputed to examine the properties. Lord Curzon's Government suggested that this question should be referred by the Bombay Government to a single arbitrator of high position, who should be empowered to call in at his discretion, for advisory purposes only, two assessors, one of whom would be nominated by Mr. Tata, the other being selected by the arbitrator himself after Mr. Tata's nomination had been made. It was explained that when the values had been finally determined it would rest with Mr. Tata to make an application under the Charitable Endowments Act, assigning for the purposes of the Institute properties representing a net income, after all costs of management, repairs, insurance, etc., have been met, of Rs. 125,000 a year, and asking that a scheme might be settled for the administration of these properties in such a manner as to

secure the stability of the income guaranteed by him. In August 1903, Mr. G. R. Lowndes, Barrister-at-law, was appointed as arbitrator by the Bombay Government, and in May 1904 the well-devised proposals framed by him were submitted to the Government of India. His award on the question of value showed that the eighteen properties devoted to the purpose of the Institute might be counted on to yield an income of Rs. 1,25,000, subject to certain technical conditions which the award laid down, and it was further stated that Mr. Tata had undertaken to guarantee an additional income sufficient to secure that the income derived from the properties in question should never fall below that amount. Mr. Lowndes further proposed that the management of the endowment properties should be entrusted to Mr. Tata or his representatives, that it should be controlled by a Board of three members, on which Mr. Tata and the Government would be represented; and that this Board should be quite distinct from the governing body of the Institute itself.

6. When the correspondence had reached this stage, and the proposals stated above were under consideration, the Government of India were informed of the death of Mr. J. N. Tata. In the Home Department letter of the 1st of June 1904 they expressed their feelings of regret and sympathy at the loss of so eminent and philanthropic a citizen and enquired what would be the effect of his death on the scheme for founding an Institute of Science initiated by him. In reply they received from Mr. R. J. Tata the generous assurance that Mr. Tata's sons were prepared to carry out the wishes of their father with regard to the Research Institute.

7. So far then as the endowment properties were concerned the difficulties had been removed. A competent body of experts had pronounced these properties to be worth Rs. 1,25,000 a year, the value originally assigned to them by the late Mr. Tata; a guarantee fund had been provided to maintain the income at this level; and a satisfactory method of management had been discovered. Lord Curzon's Government were thus placed in a position to formulate, in a more definite shape than had hitherto been possible, their intentions as to the settlement of the further questions which arose in connexion with the formation of the Institute. In February 1905 they accepted Mr. Lowndes' valuation of the properties which it was proposed to assign for the purpose of the endowment. They also agreed to his proposal relating to the guarantee fund, and they accepted his scheme for the management of the properties, subject to the condition that the Chairman of the Board of Management should be such officer resident in Bombay as the local Government might from time to time appoint. They further undertook to increase sub-

stantially the aid to be given by the Government of India. Rule 6 of the grant-in-aid code for schools and colleges in Bombay lays down that the Government grant-in aid shall in no case exceed half of the local assets, or one-third of the total expenditure of an institution during the previous official year. Applying this rule to the case of the Institute, the Government of India proposed to regard as local assets the sum of Rs. 1,25,000 derived from the endowment properties and the grant-in-aid of the Mysore Durbar, now raised to Rs. 50,000 without limit of time, in all Rs. 1,75,000; and to make a grant-in-aid of one-half of this sum, or Rs. 87,500, being the maximum admissible under the rule cited above. This was to be given without limit of time, subject merely to the condition that the Scheme of Management of the Institute was approved as regards its general principles by the Government of India, and was conformed to by the governing body of the Institute. They further agreed to raise their contribution from time to time, as the local assets available increased by endowments or contributions, provided that the amount of the grant should not exceed one-half of the local assets, and should be subject to a maximum of Rs. 1,50,000. The term "local assets" was to be limited to permanent contributions from private individuals or Native States based upon assignments of capital funds, and was not to include subsidies from local Governments or occasional subscriptions of a temporary character. The immediate effect of this concession was to make available to the Institute for the purpose of its operations a working income of Rs. 2,62,500, as compared with Rs. 1,75,000 mentioned by Sir William Ramsay as the minimum sum required for an adequate commencement. Lord Curzon's Government believed that with an assured income of this amount the governing body would be in a position to procure and retain for long periods the most competent teachers of the subjects dealt with in the Institute, and to found research scholarships for the encouragement of students. As regards initial expenditure the Government of India decided to offer a contribution of one-half of the Mysore grant of Rs. 5,00,000, thus placing at the disposal of the governing body of the Institute Rs. 7,50,000 for the purpose of constructing buildings estimated to cost Rs. 6,57,000.

8. Up to this time it had been assumed that special legislation would be required for the purpose of constituting the Institute and providing for its administration. On further consideration, however, it appeared to Lord Curzon's Government that, in view of the novel and experimental character of the undertaking, and the uncertainties attending its working during the first few years of its existence, it would be undesirable to tie the hands of the governing body by a statutory provision which could

only be altered by again having recourse to the legislature. Accordingly they proposed to provide for the administration of the Institute by means of a scheme under the Charitable Endowments Act, 1890 (VI of 1890), which was intended to deal with educational projects, and which makes special provision in Section 5 (2) for the modification from time to time of any scheme settled under the Act. The general principles to be borne in mind in framing such a scheme were discussed and stated, and the Messrs. Tata were requested to draw up proposals for giving effect to them.

9. Towards the end of November 1905, the Messrs. Tata represented that the settlement of the remaining details of the project would be materially facilitated if a Director of the Institute were appointed as soon as possible; and at their instance the Government of India moved the Secretary of State to enlist the assistance of the Royal Society in nominating a candidate for the appointment. As a result of this reference Dr. Morris W. Travers, F.R.S., Professor of Chemistry at University College, Bristol, was appointed to be the first Director. Dr. Travers arrived in India in the middle of November 1906. Since then he has been busily occupied in maturing the scheme, in consultation with the Government of India and the Messrs. Tata, on the lines of the precedents furnished by some of the more modern English Universities. The academic organization of the Institute has been worked out, involving the establishment of six departments in pure and applied science; the professors of electro-technics and applied chemistry have been selected, with the assistance of a Committee of the Royal Society, and have begun to organize their departments; plans of the buildings have been drawn up, and work has commenced on the foundations, the water-supply and drainage, and the line supplying electric power from Bangalore. These operations have been facilitated by the appointment, at the instance of the Messrs. Tata, of a Provisional Committee\* to conduct the affairs of the Institute pending the promulgation of the scheme for the management of the properties and funds, which has been delayed by reason of the complicated covenants and conveyances that have to be executed. While the Institute is under construction the income accruing from various sources will be applied to the completion of the buildings and equipment.

\* Hon'ble Mr. S. M. Fraser, C.I.E., Resident in Mysore.

Mr. V. P. Madhava Rao, C.I.E., Dewan of Mysore.

Mr. H. J. Bhabha, Director of Public Instruction, Mysore.

Mt. B. J. Padshah.

Dr. Morris W. Travers, F.R.S., Director of the Institute.

Professor Alfred Hay, D. Sc.

Professor Norman S. Rudolf, M. Sc.

The amount which the Council will have immediately at their disposal for initial expenditure includes building grants of 5 lakhs and  $2\frac{1}{2}$  lakhs respectively from the Government of Mysore and the Government of India, and a further grant of  $1\frac{1}{2}$  lakhs, to be spread over three years, from the Government of Madras. In addition to this sum of 9 lakhs, there are accumulated savings from the income of the Institute during the past two years, amounting to about 4 lakhs; and it is anticipated that there will be further considerable savings out of the income up till such time as the Institute is in full working order. The income of the Institute will also be increased to more than Rs. 2,65,000 by the interest from a sum of over half a lakh which the Messrs. Tata have added to the endowments, representing the proceeds of the Bombay properties for a part of the year 1907.

10. The following is a brief outline of the administrative arrangements which are set out in Schedule H of the Vesting Order made under the Charitable Endowments Act. His Excellency the Viceroy will be *ex-officio* Patron of the Institute, and the heads of the local Governments of India will be Vice-Patrons. There will also be--

- (a) A Court of Visitors on which the Government of India, the Government of Mysore and the Messrs. Tata and their heirs will each be represented by two members, the Messrs. Tata themselves being members during their lives. The Director-General of Education in India, the Directors of Public Instruction to the local Governments, and the Director and the Professors of the Institute will be *ex-officio* members. The Patron may appoint six members, and the Vice-Patrons one member each. The Senates of the Indian Universities may each appoint one representative and the Council may appoint as members ten representatives of science and learning in India. Donors of capital sums of not less than Rs. 2,00,000 and contributors of not less than Rs. 15,000 annually for five years will be entitled to nominate members of the Court.
- (b) A Council of twelve consisting of the Director and four Professors of the Institute, together with representatives of the Government of India, the Government of Mysore, and of each of the Messrs. Tata, and three nominees of the Court of Visitors.

- (c) A Senate consisting of the Director and the Professors *ex-officio*, with power to coopt Assistant Professors and Readers.
- (d) A Standing Committee of the Court of Visitors, consisting of four members of that body appointed by the Patron, by the Government of India, by the Government of Mysore, and by the Messrs. Tata respectively.

The Council will be the executive body of the Institute, its proceedings being subject to review by the Standing Committee of the Court of Visitors. This Committee will have the power of reporting to the Patron on the acts or proposals of the Council and the Patron may refer such report to a special committee and may afterwards make such order as may be necessary. The Senate will deal with all matters of an academic nature, so as to reduce to a minimum discussion on purely technical matters at meetings of the Council. The administration of the endowment properties in Bombay will be in the hands of a Board of Management which will be entirely independent of the governing bodies of the Institute itself. The Board will meet in Bombay, and will pay the income received from the endowment properties to the Council, to which body it will also render annual accounts.

11. With the ample resources now at their disposal the governing body of the Institute will be able to carry on their operations on a scale commensurate with the high aims which the founder of the endowment had in view. The prospects of the scheme may in fact be looked upon as assured, and the occasion is a fitting one for the Government of India to explain the policy by which their present action is dictated, and the attitude which they purpose to adopt towards the future development of the Institute. While sympathizing cordially with the far-reaching ideals of its promoters, the Governor-General in Council has no desire to associate himself intimately with the actual administration of the Institute, or to claim a determining voice in the settlement of the lines of research to be followed and the methods of instruction to be employed. He is, indeed, ready to assist in furthering by all legitimate means the great undertaking which owes its origin to the generous philanthropy of the late Mr. Tata, and has since his death been wisely and liberally promoted by his sons. But he realizes that the results of the experiment that is now about to be tried will depend less upon the conditions of the project itself than upon the character and energy of those who may come forward to take advantage of the facilities for advanced studies which it will offer.

The Government of India are anxious in no way to interfere with the free growth of whatever forms of intellectual activity and economic enterprise the Institute may encourage or create, and they will therefore confine themselves strictly to exercising no more than that degree of influence and control which is justified, and indeed rendered obligatory, by the substantial grant-in-aid which they have determined to contribute.

(1) Vesting Order under the Charitable Endowments Act, 1890 (Act VI of 1890), for the establishment of the Indian Institute of Science.

(2) Schedules A, B, C, D, E, F, G and H.

ORDER.—Ordered that a copy of the above Resolution together with the papers noted on the margin be published in the Supplement to the *Gazette of India*.

Ordered, also, that a copy of the Resolution, together with the Vesting Order and the Schedules, be forwarded to the local Governments and Administrations marginally noted, to the Foreign and Finance Departments, to the

Director-General of Education in India, and to the Director of the Indian Institute of Science for information.

H. A. STUART,

*Secretary to the Government of India.*

Madras.	Burma.
Bombay.	Eastern Bengal & Assam.
Bengal.	Central Provinces.
United Provinces.	N.-W. Frontier Province.
Punjab.	Coorg.

### Vesting Order.

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*In the matter of the Charitable Endowments Act, 1890  
and*

*In the matter of the Indian Institute of Science.*

WHEREAS Jamsetjee Nusserwanjee Tata, late of Bombay, Parsee gentleman, some time before his death, which took place on the 19th day of May 1904, made a proposal to the Government of India for founding an Institute of Research in India and endowing such Institute with immoveable properties in the City of Bombay producing an annual net rental of not less than Rs. 1,25,000 and applied to the said Government for aid to and co-operation in that scheme AND WHEREAS the lands described in Schedule C hereto have been selected for the location of the said Institute and the Government of His Highness the Maharajah of Mysore by Resolution bearing No. G-5639-G.M. 232-06-9 and dated 14th March 1907 published in the Mysore Gazette copy of which Resolution is given in Schedule D hereto assigned to the Governor-General of India in Council with effect from the 14th day of March 1907 the exclusive management of and full jurisdiction over the said lands for so long as the said lands are used for the purposes of the said Institute AND WHEREAS the Government of His Highness the Maharajah of Mysore has by letters dated 26th day of July and  $\frac{26}{28}$ th day of December 1905, copies of which collectively are given in Schedule E hereto, agreed to supplement the income of the said Institute by an annual permanent grant of Rs. 50,000 contingent upon the location of the said Institute in Bangalore and by letter dated 16th of November 1901 copy whereof is given in Schedule F hereto has also agreed to provide a sum of Rs. 5,00,000 towards the construction and erection of the buildings of the said Institute and other initial expenditure required for the purposes of the said Institute AND WHEREAS the Government of India have by letter to the Government of Bombay No. 156 dated 28th February 1905 an extract wherefrom is given in Schedule G hereto agreed to supplement the income for the time being of the said Institute by an annual grant to be made by that Government equivalent to one equal half of the income of the said Institute from time to time derived from "local assets" as defined in paragraph 5 of the said letter, but so that the total amount of such grant shall not at any time exceed Rs. 1,50,000 and also to make a grant of Rs. 2,50,000 towards the construction of the necessary buildings and other initial expenditure required for the purposes of the said Institute AND WHEREAS in pursuance

and for the purpose of carrying into effect the said proposal Dorabjee Jamsetjee Tata and Ruttonjee Jamsetjee Tata the sons and Executors and residuary legatees of the said Jamsetjee Nusserwanjee Tata have made an application to the Governor-General in Council that the properties specified in Schedule *A* hereto with the benefit of and subject to the covenants agreements conditions and terms set forth in Schedule *B* here-to may in pursuance of the provisions of the Charitable Endowments Act 1890 (Act VI of 1890) be vested in the Treasurer of Charitable Endowments for the territories subject to the Government of Bombay upon the terms as to the application of the said property and the income thereof hereinafter referred to which terms have been agreed upon between the Governor-General in Council and the said Dorabjee Jamsetjee Tata and Ruttonjee Jamsetjee Tata.

Now in pursuance and by virtue of Sections 4 and 7 of the Charitable Endowments Act 1890 His Excellency the Governor-General of India in Council hereby orders that the properties specified in Schedule *A* hereto annexed with the benefit of and subject to the covenants agreements conditions and terms set forth in Schedule *B* hereto annexed be and the same are hereby vested in the Treasurer of Charitable Endowments for the Territories subject to the Government of Bombay upon the following terms, that is to say, that the said lands in or near Bangalore shall be used for the erection of the buildings of the said Institute (intended to be called and known by the name of the Indian Institute of Science) and that the said land and buildings shall be appropriated and occupied in perpetuity for the purposes of the said Institute that the said sums of Rs. 5,00,000 and Rs. 2,50,000 shall be expended towards the construction and erection of the buildings of the said Institute and other initial expenditure of the said Institute and that the balance of the said funds in the hands of the said Provisional Committee, the said annual grant of Rs. 50,000 by the Government of His Highness the Maharaja of Mysore and such grant as may be annually made by the Government of India and also the income of the immoveable properties in Bombay described in Schedule *A* hereto shall be collected and received by the persons appointed for the purpose under the scheme settled under Sections 5 and 7 of the said Act and hereto annexed and marked with the letter *H* to be by them applied in the manner set forth in the said scheme.

H. A. STUART,  
*Secretary to the Government of India.*

**List of Properties in Bombay.**

(Extract from Schedule A to the Vesting Order).

1. Albert Buildings.
2. Gymkhana Chambers.
3. Victoria Buildings.
4. Albion Place.
5. Alexandra Terrace.
6. Jubilee Buildings.
7. Reay House.
8. Sandhurst House.
9. Roosevelt House (or Ezra House).
10. Sargent House.
11. Jenkins House.
12. New Shamjee Buildings now known as Station Terraces.
13. New Shamjee Buildings Extension also known as Station Terraces.
14. Candy House.
15. Land near Jubilee Buildings.
16. Land near Albion Place and Alexandra Terrace.
17. Land near Albion Place and Alexandra Terrace.
18. Land on Parel Tank Road (Wagheshri Hill).

**Description of the land assigned to the Governor-General of India  
in Council by the Government of His Highness the Maharaja  
of Mysore for the purposes of the Indian Institute of Science.**

*(Schedules C & D to the Vesting Order).*

The lands comprised within the boundaries defined below and forming part of the catchment area of Sankey's Reservoir, Bangalore.

The boundary line on the east commences from the point where the nulla to the north of the Sankey's Reservoir Pontoon shed joins the tank bed, and thereafter runs northward along the Sankey's Reservoir bed, crosses the road leading from the Butts to the Tumkur Road, and joins the feeder channel of the Reservoir just above this road. This channel thereafter becomes the boundary along the remaining portion of the east, and along the north and west, till it meets the old Tumkur Road running behind the Maharaj's Mills. The boundary to the south is the continuance of the road along Sankey's Reservoir to the junction of the present Tumkur Road and thence along the proposed road to meet the old Tumkur Road.

No. G. 5639-G. M. 232-06-9, dated 14th March 1907.

Whereas the lands described in the annexed schedule, and measuring approximately 371 acres and 16 guntas, are required for the purpose of locating the Indian Institute of Science associated with the name of the late Mr. J. N. Tata.

His Highness the Maharaja of Mysore is pleased to assign to the Governor-General of India in Council, with effect from the 14th day of March 1907, the exclusive management of and full jurisdiction over the said lands for so long as the said lands are used for the purpose aforementioned.

V. P. MADHAVA RAO,  
*Dewan of Mysore.*



Chains 0 1 2 3 4 5 6 7 8 Furlongs

+ Site of the Central Building

Site of the Institute

**Scheme for the Administration and Management of the Properties and Funds of the Indian Institute of Science.**

(*Schedule H to the Vesting Order*).

WHEREAS by a Vesting Order made by the Governor-General of India in Council under the power conferred by the Charitable Endowments Act (VI of 1890), by Notification No. 433 in the Gazette of India published on the twenty-seventh day of May 1909 certain immoveable properties in Bombay (particularly described in Schedule A to the said Vesting Order) were, on the application of Dorabjee Jamsetjee Tata and Ruttonjee Jamsetjee Tata vested in the Treasurer of Charitable Endowments for the Territories subject to the Government of Bombay upon the terms as to the application of the same and the income thereof therein set forth, that is to say, that the income of the said properties or of any other investments for which they may be exchanged under Section 10 of the Charitable Endowments Act, 1890, shall be collected and received by the persons appointed for the purpose under a scheme therein referred to and settled under Section 5 of the said Act being this present scheme and applied in accordance with the provisions of such scheme. Now it is hereby declared that the terms of the scheme so settled as aforesaid are as follows:—

1. The corpus of the immoveable properties in Bombay particularly described in Schedule A hereto annexed shall remain intact subject only to a power of realisation for the purposes of changes of investment. Such changes the said Treasurer of Charitable Endowments shall be at liberty to make but only on the recommendation of the Board of Management hereinafter mentioned and in accordance with Section 10 of the Charitable Endowments Act and not otherwise.
2. The net income of the said properties or of any other investments for which they may be exchanged shall be devoted to the establishment and maintenance of the said Institute and shall be collected and received as hereinafter mentioned, and paid to the Council hereinafter mentioned.
3. The object of the Institute shall be to establish Chairs and Lectureships in Science and Arts especially with a view to the promotion of original investigations in all branches of knowledge and their utilisation for the benefit of India and to provide and

to assist in the provision of suitable libraries, laboratories, and all other necessary appliances.

4. The Institute shall have the power to take over from Government and other public bodies or private individuals willing to transfer the same all such libraries, laboratories, museums, collections, together with any endowments or other funds appertaining to them together with any attendant obligations and engagements, if any, provided always that the Institute does not become affiliated to or grant affiliation to or incur responsibility for other Institutions.
5. The Institute shall have power to apply to students at any time preliminary to or during the time that they are attendant on its courses such tests as shall be from time to time prescribed. It shall have the power to confer the title of Fellow or Associate and to endow such Fellowships or Associateships and to grant certificates to students who have completed the prescribed courses of study.
6. The management of the Institute shall vest in—
  - (a) The Patron and the Vice-Patrons.
  - (b) A Court of Visitors.
  - (c) A Council.
  - (d) A Senate.
7. His Excellency the Viceroy of India for the time being shall be *ex-officio* Patron of the Institute.
8. The Heads of the local Governments of India for the time being shall be *ex-officio* Vice-Patrons of the Institute.
9. The Court of Visitors shall consist of the following persons, namely :—
 

*Firstly*.—Two representatives of the Government of India.

*Secondly*.—Two representatives of the Government of His Highness the Maharaja of Mysore.

*Thirdly*.—The said Dorabjee Jamsetjee Tata during his life and after his death and during the life of such person as shall be appointed or indicated in that behalf in any instrument in writing executed by him during his lifetime or in his last will or any codicil thereto the nominee of such person.

*Fourthly.*—The said Ruttonjee Jamsetjee Tata during his life and after his death and during the life of such person as shall be appointed or indicated in that behalf in any instrument in writing executed by him during his lifetime or by his last will or any codicil thereto the nominee of such person.

*Fifthly.*—Two representatives of the said Dorabjee Jamsetjee Tata and Ruttonjee Jamsetjee Tata or the survivor of them or after their death of the nearest major male descendant for the time being of Nusserwanjee Ruttonjee Tata, the father of the said Jamsetjee Nusserwanjee Tata, or, if there be more than one such major male descendant in an equal degree of propinquity to the said Nusserwanjee Ruttonjee Tata, then, of the eldest of such male descendants in the eldest line from the said Nusserwanjee Ruttonjee Tata. In the case of dispute as to who shall be called such descendant for the purpose of the nomination aforesaid, the same shall be referred to the Patron whose decision shall be binding and conclusive.

*Sixthly.*—One nominee of each donor of a capital sum of not less than Rs. 2,00,000.

*Seventhly.*—One nominee of each person who shall agree to pay annually a sum of not less than Rs. 15,000 for a period of not less than five years. The right of nomination shall not extend beyond the period of such donation.

*Eighthly*—Persons appointed by the Patron not exceeding six in number.

*Ninthly.*—One person appointed by each of the Vice-Patrons.

*Tenthly.*—The Director-General of Education in India for the time being and the Directors of Public Instruction to the local Governments of India for the time being.

*Eleventhly.*—The Director and all the Professors but not the Assistant Professors of the Institute.

*Twelfthly.*—One representative elected by the Senate of each of the Universities of India established and incorporated by Act of the Governor-General of India in Council,

*Thirteenthly.*—Representatives of Science and Learning in India not exceeding ten in number elected by the Council.

10. The Council shall consist of the following persons, namely :—

*Firstly.*—The Director *ex-officio*.

*Secondly.*—Professors (but not the Assistant Professors) of the Institute, not exceeding four in number nominated by the Senate.

*Thirdly.*—One representative of the Government of India.

*Fourthly*—One representative of the Government of His Highness the Maharaja of Mysore.

*Fifthly.*—One representative of the said Dorabjee Jamsetjee Tata and after his death the representative of such person or persons as shall be appointed or indicated or after the death of such appointee in that behalf by any instrument in writing executed by him during his lifetime or by his last will or any codicil thereto and in default of such appointment or indication, the representative of the nearest major male descendant for the time being of Nusserwanjee Ruttonjee Tata, the father of the said Jamsetjee Nusserwanjee Tata, or, if there be more than one such major male descendant in an equal degree of propinquity to the said Nusserwanjee Ruttonjee Tata, then of the eldest of such male descendants in the eldest line from the said Nusserwanjee Ruttonjee Tata. In the case of dispute as to who shall be called such descendant for the purpose of the nomination aforesaid, the same shall be referred to the Patron whose decision shall be binding and conclusive.

*Sixthly.*—One representative of the said Ruttonjee Jamsetjee Tata and after his death the representative of such person or persons as shall be appointed or indicated or after the death of such appointee in that behalf by any instrument in writing executed by him during his lifetime or by his last will or any codicil thereto and in default of such appointment or indication, the representative of the nearest major male descendant for the time being of Nusserwanjee Ruttonjee Tata, the father of the said Jamsetjee Nusserwan-

jee Tata, or, if there be more than one such major male descendant in an equal degree of propinquity to the said Nusserwanjee Ruttonjee Tata, then of the eldest of such male descendants in the eldest line from the said Nusserwanjee Ruttonjee Tata. In the case of dispute as to who shall be called such descendant for the purpose of the nomination aforesaid, the same shall be referred to the Patron whose decision shall be binding and conclusive.

*Seventhly.*—Three nominees of the Court of Visitors.

11. The Senate shall consist of the Director as Chairman, the Professors, and such Assistant Professors and Readers as the Council acting on the recommendation of the Senate may appoint.

12. The administration of the properties in Bombay shall be vested in a Board of Management consisting of—

*Firstly.*—The Collector of Bombay for the time being or such other officer as the Government of Bombay may appoint.

*Secondly.*—One representative of the said Dorabjee Jamsetjee Tata and Ruttonjee Jamsetjee Tata or of the survivor of them or after their death of the nearest major male descendant for the time being of Nusserwanjee Ruttonjee Tata, the father of the said Jamsetjee Nusserwanjee Tata, or, if there shall be more than one such male descendant in an equal degree of propinquity to the said Nusserwanjee Ruttonjee Tata, then of the eldest of such male descendants in the eldest line from the said Nusserwanjee Ruttonjee Tata. In the case of dispute as to who shall be called such descendant for the purpose aforesaid, the same shall be referred to the Patron whose decision shall be binding and conclusive.

*Thirdly.*—One nominee of the Government of Bombay who shall be a merchant of high standing resident in Bombay.

13. Every member of the Court of Visitors, other than *ex-officio* members, shall hold office for five years from the commencement of the year in which the appointment is made, and at the end of his term of office shall be eligible for re-appointment, but in order to obviate difficulties owing to the demission from office of all the members other than

*ex-officio* members at one time, certain of those first appointed shall hold office as follows:—

- (a) Those persons first appointed by the Patron shall hold office for four years.
- (b) Those persons first appointed by the Vice-Patrons shall hold office for three years.

14. Every member of the Council not being an *ex-officio* member shall hold office for three years from the commencement of the year in which the appointment was made and at the end of each term of office shall be eligible for re-appointment.

15. Every member of the Board of Management shall hold office for three years from the date of his appointment and at the end of each term of office shall be eligible for re-appointment.

16. Any member of the Court of Visitors except the said Dorabjee Jamsetjee Tata and Ruttonjee Jamsetjee Tata or any member of the Council or of the Board of Management who is continuously absent from India for more than one year shall be considered to have resigned his office. In the case in which the appointment is made or confirmed by the Patron he shall have power to reinstate the individual holding the appointment in his office.

17. In the event of the death or resignation of any of the persons of whom the Court of Visitors, the Council or the Board of Management shall consist before the term of office of such persons has expired, the person or authority by whom the original appointment was made may appoint another person to hold office for the unexpired residue of the term for which the person dying or resigning was originally appointed.

18. No vacancy in the Court of Visitors, the Council or the Board of Management shall invalidate the acts done or the business transacted by those bodies during the period of vacancy or vacancies and all acts done or business transacted by the members of the Court of Visitors or of the Council or of the Board of Management, as the case may be, present at a meeting, shall be valid notwithstanding any defect there may be in the constitution of such Court, Council or Board.

19. The Council shall be the executive body of the Institute subject to the conditions laid down in these regulations.

20. Subject to these regulations the Council shall frame by-laws dealing with the following matters :—

- (1) The quorum to be required at meetings of the Council and Senate and the conduct of business at such meetings.
- (2) The date of commencement and the duration of the Session of the Institute and the date of commencement and duration of the terms into which the Session may be divided.
- (3) The finances, investments and accounts of the Institute.
- (4) The payment and amount of fees to be exacted within the Institute.
- (5) The terms and tenure of appointment, duties, emoluments, allowances and superannuation allowances of the Director, the Professors and other Officers of the Institute and its permanent servants.
- (6) The rules of discipline to be observed within the Institute.
- (7) The courses of study and research within the Institute.
- (8) The award of Certificates and of the title of Fellow or Associate whether honorary or endowed.
- (9) The admission of students to the Institute.
- (10) The person or persons by whom and the form in which contracts by or on behalf of the Institute may be entered into varied or discharged and documents signed or executed.
- (11) All such other matters as may be required or authorized under these regulations.

Such by-laws and any additions to or alteration in the same when sanctioned by the Patron shall be effective and binding and subject thereto four members of the Council or two members of the Senate shall form a quorum.

21. The net income derived from the properties as provided in clause 39 of these regulations from the grants made to the Institute by the Government of India and by the Government of His Highness the Maharaja of Mysore and from all other sources shall be received by the Council and

shall be dealt with in the manner provided in these regulations or under by-laws. The Council shall regulate the expenditure and manage the accounts of the Institute which shall be audited annually and in such a manner as the Patron shall direct.

22. Any subscriptions or annual donations for the purposes of the Institute shall be received by the Council and shall be treated as part of the income for the year in which they are received. No subscriptions or donations shall be accepted if they are accompanied by conditions inconsistent or in conflict with the nature, objects and provisions of this scheme.

23. The Council shall have charge of the unapplied income belonging to the Institute and shall have power to utilize such unapplied income in the purchase of Government Promissory Notes or other Public Securities admissible under the Indian Trusts Act which shall be vested in the said Treasurer. Such unapplied income shall be available for expenditure in the next or in any subsequent year, but it shall not be taken into account in calculating the amount to be contributed in such subsequent years by the Government of India.

24. The Council shall have the power to accept funds or properties for the purposes of endowment of the Institute provided that such funds or properties are unaccompanied by conditions inconsistent with the nature, objects or provisions of this scheme. Such funds or properties shall be vested in the said Treasurer under the terms and conditions as to the application thereof provided in Section 2 of these regulations.

25. The Council shall, for every appointment of a Director subsequent to the appointment of Dr. MORRIS W. TRAVERS, F.R.S., who is hereby appointed the First Director of the Institute with effect from the 16th November 1906, and also of a Professor in any branch of learning for which a Chair exists or is created subsequent to the appointment of Dr. A. HAY, D.Sc., M.I.E.E., Professor of Electrical Technology, and NORMAN S. RUDOLF, Esqr., M.Sc., F.I.C., Professor of Applied Chemistry, who are hereby appointed to be Professors of Electrical Technology and Applied Chemistry respectively with effect from the 30th January 1908, nominate a Committee to assemble in England. Two members of such Committee shall whenever practicable be representatives of that branch of learning in which the appointment is to be made. The Committee shall send a name or names together with their recommendations to the Council.

26. The Senate may suggest to the Council the name of any person teaching or superintending a course of study or research in connection with the Institute for the appointment referred to in the last section, and the Council shall submit such suggestion to the Committee.

27. The Council shall make the appointment from among the persons so recommended and such appointments shall be subject to confirmation by the Patron.

28. Appointments on the teaching staff below the rank of a Professor shall be made by the Council subject to confirmation by the Patron. In making such appointments the Council shall consider the recommendations of the Senate.

29. In cases in which financial or other considerations do not admit of the appointment of a Professor or an Assistant Professor the Council acting on the recommendation of the Senate may appoint a Reader in any Branch of learning for a limited period.

30. The Council shall regulate the admission to the Institute of students and of other persons who may apply for permission to make use of its laboratories and libraries. Certificates of study shall be granted by the Council and Fellowships shall be conferred subject to confirmation by the Patron.

31. The Council may on its own initiative suspend any Student, Fellow or Member of the Teaching Staff of the Institute, and may also dismiss any Student, Fellow or Member of the Teaching Staff other than the Director or a Professor, but no Director or Professor shall be dismissed without the sanction of the Patron. On requisition being made by the Standing Committee hereinafter constituted to the Patron in that behalf and on such requisition being approved by him and communicated to the Council the Council shall pending inquiry suspend any Student, Fellow or Member of the Teaching Staff including the Director and the Professors, and after enquiry has been made in the manner provided in Section 34 of these regulations the Patron may order the dismissal of such person.

32. Subject to confirmation by the Patron the Council may remove from the Register of the Institute the name of any person entered thereon who shall have been convicted of what in their opinion constitutes a serious offence.

33. Not later than six weeks after the commencement of the first term of each session as prescribed by By-laws the Council shall submit to the Patron, to the Vice-Patrons and to each Member of the Court of Visitors a report which shall include :—

- (a) An account of the work of the Institute for the previous session.
- (b) An audited balance-sheet showing the income and expenditure for the previous session.
- (c) A budget estimate for the current session.
- (d) A copy of the report submitted by the Board of Management.

34. Either on his own initiative or on the receipt of a requisition signed by at least five members of the Court of Visitors desiring that any matter relating to the Institute be the subject of enquiry the Patron may order :—

- (a) That a Committee appointed by him from among the members of the Court of Visitors shall meet at such time and place as he shall appoint to consider and to report to him on the matter, or
- (b) That the matter be referred to the Royal Society for their opinion, or
- (c) That the matter be referred to the Council for their opinion.

On the receipt of the report from the Committee of the Court of Visitors, from the Royal Society or from the Council as the case may be the Patron shall pass such order as he may think fit and that order shall be final.

35. There shall be a Standing Committee of the Court of Visitors to be from time to time nominated from amongst the members of the Court as follows, namely, one who shall be the Chairman, by the Patron, one by the Government of India, one by the Mysore Government and one by the said Messrs. Dorabjee Jamsetjee Tata and Ruttonjee Jamsetjee Tata or the survivor of them and after the death of such survivor by any person appointed in that behalf by such survivor in any instrument in writing executed by him during his lifetime or in his last will or any codicil thereto and in default of such appointment or indication or after the death of such appointee, by the nearest major male descendant for the time being of Nusserwanjee Ruttonjee Tata, the father of the said Jamsetjee Nusserwanjee Tata, or, if there be more than one such major male

descendant in equal degree of propinquity to the said Nusserwanjee Ruttonjee Tata, then of the eldest of such male descendants in the eldest line from the said Nusserwanjee Ruttonjee Tata. (In the case of dispute as to who shall be called such descendant for the purpose of the nomination as aforesaid, the same shall be referred to the Patron whose decision shall be effective and binding.) Provided that members of the Court, who are also Members of the Council, shall not be eligible to serve on the Standing Committee. In each Session not later than six weeks after the receipt of the report mentioned in clause 33 of these regulations the members of the said Committee shall meet at such place as may be fixed by the Chairman to consider the said report and any other matter connected with the Institute. The said Committee shall have power from time to time to require the Council to furnish such information or particulars in connection with the Institute as may be considered necessary. The said Committee may make recommendations to the Council or the Patron. Whenever the said Committee are of opinion that any matter in connection with the Institute requires investigation or inquiry, the said Committee shall report to the Patron who may then appoint a Special Committee to make such investigation or inquiry and on the receipt of the report of such Special Committee the Patron shall pass such orders as may be necessary and such orders shall be final. No extraordinary expenditure, that is to say, expenditure over and above the usual recurring expenditure that may be budgetted for any Session, shall be made if the Standing Committee communicates to the Council its resolution that such expenditure shall not be incurred until after it has had an opportunity of communicating with the Patron thereon and until after such expenditure is eventually sanctioned by the Patron. If in any Session the Council has in view any such extraordinary expenditure for the next Session, it shall at once communicate the same to the Standing Committee with such particulars as may be necessary so as to give the Standing Committee sufficient time to consider the same and if need be to report thereon to the Patron before such expenditure shall be made. The provisions of clauses 14, 16, 17 and 18 shall apply to the Standing Committee.

36. All communications between the Council and the Senate or between the Vice-Patrons, the Members of the Court of Visitors and the Council shall be carried on through the Director. All communications from the Court of Visitors or from the Council to the Patron shall be addressed through the Director. The Standing Committee of the Court of Visitors may communicate directly with the Patron.

37. The Director shall act as recorder to the Institute and shall have charge of all documents relating to the Institute other than those appertaining to the Board of Management.

38. Subject to review by the Council the Senate shall have charge and general regulation of teaching and research within the Institute and may report to the Council or through the Council to the Patron, Vice-Patrons or Court of Visitors upon any matter connected with teaching or research.

39. The Board of Management shall look after and manage all the aforesaid endowment properties, collect the rents and other income thereof and make thereout all necessary and proper disbursements and also ascertain and set aside the amounts for sinking fund, substantial repair fund, ground rent fund and other necessary funds to make provisions for future contingencies in connection with the endowment properties which the Board shall consider necessary or proper and shall pay the net rents or other income to the Council, and shall otherwise administer the said properties, and act in the administration of the trust. The Board shall furnish to the said Treasurer such information and abstracts of accounts as may from time to time be required by him. The funds set aside as aforesaid shall until their utilization be invested in the purchase of Government of India Promissory Notes or other public securities admissible under the Indian Trusts Act. The Board shall be at liberty from time to time to expend out of all or any of these funds such sum or sums of money as it may consider necessary or proper for improvements in, and alterations and additions to, the endowment properties. With regard to such of the endowment properties as are leaseholds the Board will arrange for payment of rents, for carrying out repairs, for insurance and generally for performance and observance of the covenants on the lessee's part contained in the leases under which the properties are held.

40. The Board shall hold at least one meeting every month with a maximum of three meetings per month and the fee of each member for each meeting attended by him shall be Rs. 30. The Board shall render an account of their management to the Council once every year.

41. The Board shall once every year cause all the endowment properties to be surveyed and certified as to their state and condition by the Presidency Executive Engineer or by some other competent Architect or Engineer not connected with the management of the same.

42. All acts done and engagements entered into hitherto for the purposes of the Institute by Dr. Morris W. Travers, F.R.S., the first Director of the Institute, with the authority and sanction of the said Dorabjee Jamsetjee Tata and Ruttonjee Jamsetjee Tata or of the Provisional Committee appointed at the request of the said Dorabjee Jamsetjee Tata and Ruttonjee Jamsetjee Tata prior to the notification of this scheme to conduct the affairs of the Institute until such notification shall be binding upon the Institute.

43. The said Dorabjee Jamsetjee Tata and Ruttonjee Jamsetjee Tata have agreed to give a guarantee in the sum of Rs. 8,000 per annum to be secured upon certain immoveable property belonging to them and situated at Khar Road in Bandora, District Thanna, in the Bombay Presidency, for the purpose of making up out of the same any deficit that may occur in the net annual income of the said endowment properties described in Schedule **A** to the said Vesting Order upon the terms and conditions set forth in Schedule **B** hereto.

44. None of the provisions of this scheme shall at any time hereafter be added to altered or varied during the lives of the said Dorabjee Jamsetjee Tata and the said Ruttonjee Jamsetjee Tata without their consent or during the life of the survivor of them without his consent or after the death of such survivor and during the life of the person appointed by such survivor to nominate representatives on the Standing Committee of the Court of Visitors as provided in clause 35 without the consent of such person.

**First Annual Report of the Director to the Council, Indian  
Institute of Science.**

*I.—Introduction.*

The history of the development of the scheme for the establishment of the Institute up to the commencement of the year, 1908, has been reviewed by the Government of India in their Resolution, dated Simla, the 27th May, 1909. By the end of the year 1907 a scheme for the management of the Institute had been drawn up and approved by the Government of India, the Government of Mysore, and the Messrs. Tata, and it only remained for the Government of India to notify the vesting of the endowment properties in the Treasurer of Charitable Endowments for the Bombay Presidency. The academic organization, and a scheme for the construction and equipment of laboratories and other buildings, had also been prepared by the Director, and submitted to the Government of India, the Government of Mysore and the Messrs. Tata. In March 1908, with a view to expediting the organization of the Institute, His Excellency the Viceroy, as Patron of the Institute, was pleased to appoint a Provisional Committee to manage the affairs of the Institute, till such time as the Council should come into being under the scheme accompanying the Vesting Order. The Provisional Committee consisted of the following members:—

- H. J. Bhabha, Esq., M.A.
- The Hon'ble Mr. S. M. Fraser, C.I.E., I.C.S.
- Alfred Hay, Esq., D.Sc., M.I.E.E.
- V. P. Madhava Rao, Esq., B.A., C.I.E.
- B. J. Pádsháh, Esq.
- Norman S. Rudolf, Esq., M.Sc., F.I.C.
- Morris W. Travers, Esq., D.Sc., F.R.S.

The Provisional Committee met for the first time on the 23rd March 1908, to consider a Report by the Director embodying the proposals referred to above, and also the plans for certain buildings, which had been prepared by Messrs. C. F. Stevens & Co., of Bombay. The Director's original proposals are in principle with those which are contained in the present Report. They differ from the latter in points of detail to a considerable extent, and for this reason, and on account of the fact that the information with regard to building rates on which the original estimate was based proved to be incorrect, the cost of the buildings and equipment for the Institute has proved to be considerably greater than was at first anticipated.

Under the scheme laid before the first meeting of the Provisional Committee it was proposed to spend Rs. 12,00,000 on buildings and equipment for six departments, for which the guaranteed income, amounting to Rs. 2,62,500, was sufficient. The Provisional Committee had at their disposal, for the purpose of constructing and equipping the buildings, capital grants of Rs. 2,50,000 from the Government of India and Rs. 5,00,000 from the Government of Mysore; and it was proposed to make up the deficit by utilizing for initial expenditure the savings from the income, which must necessarily exceed the expenditure till the Institute were fully established. The Provisional Committee accepted the Director's proposals, and authorized him to advertise for tenders for the construction of the foundations and plinths of the buildings, according to the plans prepared by Messrs. Stevens & Co. At the second meeting of the Committee, held on the 23rd April, the tender submitted by Mr. T. C. W. Skipp was accepted, and Messrs. Stevens & Co. were instructed to prepare plans and estimates for the superstructures of the buildings.

The building operations were commenced in the course of the month of May under the supervision of Mr. W. Miller, who had been appointed Clerk of the Works. In the meantime the plans and estimates for the superstructure were being prepared, and it was proposed to bring them before the Provisional Committee towards the end of the year. At the October meeting of the Committee, however, Mr. Pádsháh brought forward a motion to restrict the initial expenditure to Rs. 7,50,000, the amount of the capital grants of the Government of India and the Government of Mysore. Mr. Pádsháh contended that the Report of Professor Masson and Colonel Clibborn, referred to in the Resolution of the Government of India mentioned above, had shown that the cost of the buildings and equipment should be not more than Rs. 6,57,600. He held that in any case the Committee as a provisional body was not entitled to spend funds intended for current expenditure on items which should be charged to capital account. Further, the scheme they had adopted provided no reserve to meet a possible increase in the estimates. The Provisional Committee held that they were in no way bound by this report, which had not been communicated to them officially. They were also of the opinion that since the Report was based on the supposition that the income of the Institute would be only Rs. 1,50,000, instead of Rs. 2,62,500, it did not apply to conditions which then obtained. There was also no doubt of the fact that the estimates contained in the report were based on inaccurate information with regard to the cost and dimensions of buildings, and that many important items had been omitted altogether. The Committee therefore decided to adhere to the

principle which they had accepted, and to utilize the surplus income, which would otherwise remain idle, for what they considered to be the best advantage of the Institute.

Though Mr. Pálshíth's motion was rejected, in the course of the month of November the Government of India, after consulting the Messrs. Tata, informed the Provisional Committee that in view of the fact that the Council would shortly come into being, "they were to proceed so as not to commit that body to a scheme for building and equipment costing more than Rs. 7,50,000. No further meetings of the Provisional Committee were held, and on the 27th May, 1909, the date of the publication of the Vesting Order, in accordance with the terms of its appointment it ceased to exist. The Finance Sub-committee, consisting of Mr. V. P. Madhava Rao, the Director, and Professor Hay, continued to transact the business of the Institute up to the date of the first meeting of the Council.

By the end of January, 1909, the plans and estimates for the buildings had been completed, and the Director, assisted by his colleagues and by the architects, had had time to consider every detail. Preliminary enquiries made by the Director and Mr. Stevens during their visit to Bangalore early in 1907 had tended to show that the building rates current in Bangalore were low. The information they obtained was however based on official schedules of rates, and as no buildings of any magnitude were then under construction they were unable to verify them. Extended enquiries conducted during the year 1908 led to the conclusion that building in Bangalore was much more expensive than it had appeared to be, and that it would be impossible to construct suitable buildings at less than one and a half times the cost per unit area set down in Professor Masson and Colonel Clibborn's Report. The cost of equipping the departments also proved to be considerably greater than was anticipated.

As it was expected that the Council would come into being early in the year, in the course of the month of March tenders were invited for the construction of the buildings. Three tenders were received, and of these the tender submitted by Mr. T. C. W. Skipp was considered by the Director and by the architects to be in every way the most satisfactory. As in the course of the next month it became clear that the Council, even if appointed, could not meet for some time, Mr. Skipp, who was still engaged in completing the first contract, was instructed to proceed with the construction of the roads, with the levelling of the site, and with such masonry and woodwork as would enable him to keep his building staff together. The Director informed the Members of the Provisional Committee by circular letter of the action which he had taken.

On the 27th May the Government of India published the Vesting Order in the *Gazette of India*, and with it the Scheme for the Management of the Institute. The Council did not however come into being immediately, and as the Government of India decided to conduct the correspondence relating to the appointment of the Members, the Director left India on short leave. The appointment of the following Members of the Council was notified in the *Gazette of India* on the 30th July:—

T. Ananda Rao, Esq., B.A.  
 H. J. Bhabha, Esq., M.A.  
 The Hon'ble Mr. S. M. Fraser, C.I.E., I.C.S.  
 Alfred Hay, Esq., D.Sc., M.I.E.E.  
 B. J. Pádsháh, Esq.  
 Norman S. Rudolf, Esq., M.Sc., F.I.C.  
 Morris W. Travers, Esq., D.Sc., F.R.S.

In the absence of the Director Professor Rudolf summoned a meeting of the Council for the purpose of transacting urgent business, and as Mr. V. P. Madhava Rao had consented to act on the Finance Sub-committee till the Council should be appointed, he was invited to attend the meeting. The business of the meeting consisted in validating the acts of the Finance Sub-committee of the Provisional Committee, and in appointing a Finance Committee consisting of the Director, Mr. T. Ananda Rao, and Dr. Alfred Hay, with power to sign cheques, to make payments, to receive monies, to invest unapplied income, and to exercise such other financial functions as the Council might from time to time delegate to them.

On the 4th November the Council met to consider a report by the Director embodying a revised scheme for the building and equipment of the Institute, the architect's revised plans and estimates, and the tenders for the construction of the various buildings. The details of the scheme will be dealt with in this report. It involved an expenditure of Rs. 19,07,000, to provide for six departments with an establishment of six professors, four assistant professors, and a librarian. The Council was however asked to sanction the expenditure of Rs. 16,00,000, as this sum would be available for initial expenditure within the course of the next financial year. The Council adopted the Director's proposals, and accepted Mr. Skipp's tender for the construction of the buildings, and Messrs. Pallonji's tender for the drainage work. They also confirmed contracts entered into by the Director with the South India Industrials for the supply of bricks, tiles, etc.

At the first meeting of the Council Mr. Pádsháh had protested against the illegality of holding meeting till the Court of Visitors had had time to exercise the right of nominating three members of Council to which they were entitled under Section 10, *seventhly*, of the scheme accompanying the Vesting Order. The Council was of the opinion that the situation was provided for under Section 18 of the scheme, but while they disregarded Mr. Pádsháh's protest they submitted the correspondence to the Government of India, who expressed the view that the Council was properly constituted for the purpose of transacting the business of the Institute. Mr. Pádsháh renewed his protest, and later submitted to the Council and to the Government of India Counsel's opinion on his contention, with the result that the Government of India informed the Council that they must consider themselves properly constituted only for the purpose of electing Representatives of Science and Learning on the Court of Visitors, under Section 9, *thirteenthly*, of the scheme. This information was communicated to a meeting of the Council held on the 9th March 1910. Before dissolving the meeting the members present expressed the hope that in view of the loss which would result to the Institute were it unable to meet its liabilities, the Finance Committee would continue to transact business till the Council should be completed.

The Finance Committee refused to accept this responsibility, with the result that at the end of March the Director found that as sums above the value of Rs. 100 could only be paid by cheques bearing the signatures of all the three members of the Committee, he was without the means of meeting the contractors' bills and other liabilities. He at once informed the Government of India as to what had taken place, but as it appeared certain that they could not help him he adopted the following course. He wrote to the Bank of Madras, explaining the position, and asking permission to open an account in his own name, and to draw against it without paying interest. This the Bank permitted him to do, and as in the meantime he received a credit of Rs. 50,000 from the Government of Madras, in payment of the third instalment of their contribution of Rs. 1,50,000, he paid this sum into the new account. The Director also instructed the Bank of Madras to retain deposits to the amount of Rs. 4,16,000 on fixed deposit at 4 per cent. for a further period of six months, and the Yokohama Specie Bank to retain a deposit of Rs. 2,13,000 on fixed deposit at 4½ per cent. for one year.

On the 25th May His Excellency the Viceroy, as Patron of the Institute, was pleased to announce that the members of the Court of Visitors had

nominated the following three gentlemen to represent them on the Council :—

The Director of Industries, Madras.

Gilbert T. Walker, Esq., M.A., Sc.D., F.R.S., Director-General of Observatories.

The Hon'ble Mr. A. G. Bourne, D.Sc., F.R.S., C.I.E., Director of Public Instruction, Madras.

*II.—The funds available for current and initial expenditure.*

Under the scheme originally put forward by the late Mr. J. N. Tata's Committee the Institute, or Imperial Teaching University, was to include a Scientific and Technical Department, a Medical Department, and a Philosophical Department. The estimated initial outlay was Rs. 15,00,000, and the estimated annual expenditure Rs. 3,00,000, but it is now quite clear that these amounts would not be sufficient to defray the expenses of a single one of these departments, or faculties as they should properly be termed. The scope of the work which the Institute can undertake has not been limited by the terms of the Scheme accompanying the Vesting Order; it is, however, clearly understood that it is the primary object of the founders—the Government of India, the Government of Mysore, the late Mr. J. N. Tata, and his sons Sir D. J. Tata and Mr. R. J. Tata—to provide in the first instance for teaching and research in pure and applied science, including medical and social sciences. The policy adopted by the Provisional Committee, and accepted by the members of the Council appointed under the notification of the Government of India of the 30th July, 1909, which now awaits confirmation by the completed Council, has for its aim the establishment of interdependent departments so as to form what would be called in a Modern University a Faculty of Pure and Applied Science. The income which is immediately available is sufficient for the maintenance of six departments, but it is only by utilizing the savings from the income, which must for some time exceed the annual expenditure, that sufficient money can be obtained for initial expenditure on buildings and equipment. The first need of the Institute is money for expenditure on buildings, apparatus and books, without which it will be impossible to utilize the income to the fullest advantage.

The establishment of a complete and highly efficient Faculty of Pure and Applied Science will necessitate the establishment of several departments beyond those which it is now proposed to create, and it is hoped that money will be forthcoming for this purpose. Since the last meeting of the Council the Director has been informed that a generous

offer has been made of an annual contribution for a limited number of years for the purpose of establishing a School of Social and Economic Studies. The details of the scheme have not yet been worked out, and the proposal cannot be discussed at length in this report. It is clear, however, that were such a school organized on practical lines, under the direction of competent professors, and care taken to admit only capable and properly qualified students, it might do useful work in the investigation and solution of Indian problems.

Before considering the academic details of the scheme which has been adopted by the Provisional Committee and by the members of the Council it will be well to examine the financial position of the Institute. The guaranteed income at the outset will be :—

	Rs.
Income from the endowment properties	... 1,25,000
Government of India annual grant	... 87,500
Government of Mysore annual grant	... 50,000
Interest on investments	... 3,800
 Total ...	 2,66,300

The sources from which the first three items are derived are dealt with in the Resolution of the Government of India and the Vesting Order. The securities from which the annual income of Rs. 3,800 is derived were purchased by the Finance Committee on behalf of the Council early in the present year in accordance with the following agreement. When the Provisional Committee was appointed, the Government of India, the Government of Mysore, and the Messrs. Tata agreed to pay to the Institute the amount of their guaranteed grants, and the guaranteed income from the Bombay estates, respectively, from the 1st January 1908. As, however, the Government of India paid their annual grant from the 1st April in the previous year, the Messrs. Tata agreed to pay the guaranteed income from the Bombay estates from the same date, less their out of pocket expenses on account of the Director's salary and expenses, which they had paid from the date of his arrival in India up to the 31st December, 1907. They made it a condition, however, that a sum of money equal to the amount deducted should be added to their additional contribution, and that the whole sum amounting to Rs. 93,750 should be utilized for the purchase of securities, which should be added to the endowment of the Institute.

As has been stated in the introduction to this report, the Provisional Committee, and afterwards the members of the Council, adopted the

view that no distinction should be drawn between funds available for initial and recurring expenditure. The Director purposely refrains from using the word capital in reference to expenditure on buildings and equipment, for the reason that this term should be used only in the case of expenditure on productive works. The buildings and equipment of the Institute will be of no use for any purpose other than that for which they have been designed, and will have no value in the open market. The term initial expenditure covers all expenditure, whether on buildings, machinery, apparatus, chemicals, or stores, which must be incurred before the whole or any part of the organization can be considered to be in working order. Under the scheme which is now before the Council it is proposed to spend such funds as may be available, without regard to the source from which they may be derived, on buildings, equipment, salaries, or working expenses, so as to bring the Institute into being at the earliest possible date, and to maintain it in the highest state of efficiency.

The funds which will be available for initial expenditure within a year from the date of this report amount to at least seventeen lakhs of rupees, and to eighteen lakhs before the end of the financial year 1911-12. This amount is mainly derived from the capital grants of the Government of India and the Government of Mysore, from donations by the Governments of Madras and Bombay, and from savings from income. To these sums must be added a donation of Rs. 5,000 by Mr. K. C. Bedarkar, and the interest on money placed on fixed deposit, which will amount to not less than Rs. 70,000 before the end of the financial year 1911-12. Statements of income and expenditure up to the 31st March, 1910, and an estimate of current expenditure during the current financial year are included in Section V of this report. The following table shows the amount of money which will be available for expenditure on buildings, equipment, etc., at the end of each financial year:—

Year.		Receipts.	Current expenditure.	Annual balances.	Fund for building, etc.
1907-08	Government of India grant ...	2,50,000			
	Government of Mysore grant ...	5,00,000			
	Government of India annual grant ...	87,500			

Year.		Receipts.	Current expenditure.	Annual balances.	Fund for building, etc.
	Government of Mysore annual grant* ...	12,500			
	Contribution by Messrs. D. J. and R. J. Tata* ...	31,250			
	Donation by Mr. K. C. Bedarkar ...	5,000			
	Current expenditure ...		11,944	8,74,306	8,74,306
1908-09	Government of India annual grant ...	87,500			
	Government of Mysore annual grant ...	50,000			
	Government of Madras first instalment of grant of Rs. 1,50,000 ...	50,000			
	Contribution of Messrs. D. J. and R. J. Tata ...	1,25,000			
	Interest on fixed deposits ...	5,024			
	Current expenditure ...		63,660	2,53,864	11,28,170
1909-10	Government of India annual grant ..	87,500			
	Government of Mysore annual grant ..	50,000			
	Government of Madras second instalment of grant ...	50,000			
	Government of Bombay first instalment of grant of Rs. 1,00,000 ...	50,000			
	Contribution by Messrs. D. J. and R. J. Tata† ...	20,833			
	Income from endowment properties† ... ...	1,04,167			
	Interest on fixed deposits ...	17,053			
	Contribution by Messrs. D. J. and R. J. Tata for period 1st April to 31st December, 1907, less expenses ... ...	57,023			
	Current expenditure ...		73,190		
	Purchase of securities ...	94,500	2,68,886	13,97,056	

\* These grants were paid from the 1st January, 1908.

† The Vesting Order took effect from the 1st June, 1909.

Year.		Receipts.	Current expenditure.	Annual balances.	Fund for building, etc.
1910-11	Government of India annual grant ..	87,500			
	Government of Mysore annual grant... ..	50,000			
	Government of Madras final instalment of grant ...	50,000			
	Government of Bombay second instalment of grant (?) ... ..	50,000			
	Income from endowment properties ... ..	1,25,000			
	Interest on investments ...	3,800			
	Interest on fixed deposits (estimated) ... ..	34,000			
	Expenditure (estimated at not more than) ...		1,30,000	2,70,000	16,70,000
1911-12	Guaranteed income ...	2,66,300			
	Interest on fixed deposits (estimated) ... ..	15,000			
	Current expenditure (estimated at not more than) ... ..		1,50,000	1,30,000	18,00,000

### *III.—The Organization of the Institute.*

It is now possible to consider the scheme for the organization of the Institute. It appears probable that the income will be ample to maintain six departments, but that the funds available for initial expenditure will not be sufficient to provide buildings and equipment for all of the departments immediately. This is not, however, entirely a misfortune, for until three or four departments are in working order it will be difficult to determine to which of several possible subjects the remaining departments, which it will be possible to establish, should be devoted. Were funds available for a dozen departments the selection would be a matter of less difficulty, for it is not only necessary to consider whether a subject is likely to attract students, but also to bear in mind the important fact that an institution such as the Institute must be built up as a homogeneous whole, and not as a collection of isolated special departments.

The present Director was appointed in the year 1906 by the Secretary of State for India, and took up his duties on the 16th November of that year. The appointment was made on the recommendation of the Royal Society, the correspondence being conducted through Sir William Ramsay, K.C.B. Professor Travers was informed that the income attached to the post would be £1,800 per annum, with a pension of £500 per annum after ten years' service or £750 per annum after fifteen years' service. Beyond the fact that the guaranteed income of the Institute would be Rs. 2,62,500 and that Rs. 7,50,000 would be immediately available for expenditure, no further information was available, except such as was contained in Sir William Ramsay's Report to the late Mr. Tata's Committee. It may be pointed out that the rules of service in British Universities are usually unwritten, and of a very elastic character, and as it was understood that the Institute was to be a university institution, it was not thought necessary to enter into details at that time.

It is unusual for universities and similar institutions to pension their professors, as the pensions are an uncertain charge, which may become large in proportion to the total income, and when any arrangement is made to provide incomes for members of the staff after retirement, it is done by setting aside a sum of money annually, bearing a fixed proportion to the income of each individual, to accumulate at interest. The capital is considered to be the property of the individual on whose behalf the investment is made, and is payable to him on retirement. Sometimes a deduction is made for the purpose from the nominal salary, sometimes a sum proportional to the salary, and in addition to it, is set aside by the institution, and sometimes a deduction is made from the salary, a sum proportional to it is added to it by the institution, and the whole is allowed to accumulate at interest. However, it makes no difference to the individual which method is adopted, the result in either case being that he receives a certain sum annually, and his retiring fund increases by a proportional sum annually. The second alternative has been adopted in the case of the two professors who have been appointed, and the Director suggests that the principle should apply in the case of all future appointments. A separate memorandum on the subject of pensions and retiring allowances will be submitted to the Council, it suffices to state here that a fund should be formed to provide for the present Director's pension within his own term of office, and this will necessitate setting aside Rs. 8,000 annually to accumulate at 4 per cent. compound interest.

The salary of each of the two professors who have already been appointed has been fixed at Rs. 15,000 per annum, increasing after the

sixth year of completed service by equal instalments of Rs. 750 to Rs. 18,750 per annum. In addition to the salary a sum, equal to ten per cent. of it, is to be set aside to accumulate at four per cent. compound interest, the capital sum so accumulated is to be payable to the professor on retirement after five years' completed service.

Under Sections 25 to 27 of the Scheme for the Management of the Institute, future appointments are to be made by the Council on the recommendation of a Committee appointed by them, which will assemble in England. It need not be pointed out that favourable conditions of service will be considered as important as adequate remuneration by intending candidates for appointments. No scientific man with reasonable prospects of obtaining a chair in a Western University, will consider the acceptance of an appointment in India, whatever pay may be offered, unless the terms of service are in accordance with academic tradition. Freedom of action in his own department, subject to review of his conduct of it by the constituted authorities, and liberty to return to Europe at frequent intervals, will probably be regarded by most men as absolutely essential. It is to be hoped that the Institute will succeed in securing the services of men of experience and ability between the ages of thirty and forty, and will retain them for at least ten years. The terms on which two professors have been appointed will be laid before the Council, and it is suggested that, with slight modification, they should be recognised as the terms on which future appointments will be made.

The terms on which assistant professors will be appointed likewise await discussion by the Council. Those proposed are, in the opinion of the Director, at least as attractive as the terms offered to professors in the Indian Education Service, and are such as should satisfy young men who have already held junior appointments in Western University Institutions. It may be pointed out that in British Universities an assistant has usually completed an honours course, and spent a couple of years abroad. He is usually not less than twenty-four years of age at the time of his first appointment, and he is not likely to be made an assistant professor till he is thirty, and then only if he has distinguished himself as a teacher and investigator. A man is rarely appointed to a chair till he is at least thirty-three years old. The pay in all junior appointments is small, but the holders of them have time for research work, and are able to supplement their salaries by teaching, writing, and lecturing. Further, such appointments are almost invariably of a temporary character.

These remarks have been introduced to make it clear that the assistant professors should not be merely university graduates, even though they may possess unusually high qualifications. Professorships in India are often filled by such men, and the Director is acquainted with many cases in which a man, who would not be able to obtain an assistantship in a British University, has been appointed professor in an Indian College. If the Institute is to take a high position amongst the scientific institutions of the world, appointments on its staff must be regarded in an altogether different light. It is proposed that the pay of an assistant professor shall commence at Rs. 7,500 per annum, and that the appointment shall be made in the first instance for three years. On re-appointment after three years for a further period, the salary should increase by equal increments of Rs. 750 to a maximum of Rs. 9,000. The retiring allowance is to be calculated at the same rate as that of the professors.

Supposing now that the staff consist of the Director, five professors, four assistant professors, and a librarian who will rank as assistant professor, the maximum total charges under the headings salaries and retiring allowances will be :

	Salaries	Retiring allowance and pension fund.
First year	...      Rs. 1,82,000	Rs. 18,500
Sixth year	...      „ 1,38,000	„ 19,100
Eleventh year	...      „ 1,56,750	„ 21,000

It is, however, obvious that the maximum can never be attained, and that the probable maximum will be slightly above the mean values for the first and eleventh years. It is extremely unlikely that the total amount of the salaries will exceed Rs. 1,47,500, or that the sum required for pensions and retiring allowances will exceed Rs. 20,000.

Since a considerable proportion of the scientific journals and other works of reference, to which students engaged in research are continually obliged to refer, are published only in French or German, a working acquaintance with at least one, or preferably both of these languages, is desirable in the case of anyone intending to take up a branch of science as a profession. Every graduate in a British University is obliged to show that he is capable of abstracting a paper written either in French or German, and some such test should be applied to students of the Institute before awarding them the title of Associate or Fellow. It is not difficult for an Englishman to acquire a sufficient knowledge of a foreign language for such a purpose, and Indian students are generally credited with the linguistic faculty. It is suggested that it should be the duty of the librarian to instruct students in French and German, and to assist them in referring to works in those languages in the library.

The terms of appointment and conditions of service of the subordinate staff have yet to be considered by the Council, but in the meantime the following members of the staff have been appointed: a head clerk at Rs. 80-10-150, an accountant at Rs. 40-5-80, and a junior clerk at Rs. 20-2/8-40, and 7 peons at Rs. 8 to Rs. 10. One assistant at Rs. 20-2/8-40 and a boy at Rs. 6 have been employed in the laboratory at the office for the past eighteen months. It is proposed to set aside one anna for each rupee of salary of each member of the subordinate staff to form a retiring allowance. For the payment of demonstrators, who will receive from Rs. 100 to Rs. 150 per mensem, a sum commencing at Rs. 10,000 and rising to Rs. 20,000 has been set aside. This will allow two demonstrators to each department.

It will be necessary to form a fund to cover repairs and the insurance of buildings. The total value of the buildings in the completed scheme will be about Rs. 13,50,000, and the amount to be set aside for repairs, calculated at  $\frac{1}{2}$  per cent. of the total value will be Rs. 6,750. For insurance it is usual to set aside  $\frac{3}{16}$ th of the value, less  $\frac{1}{16}$ th, which is reckoned to be the value of the foundations. The charge under this heading will be Rs. 2,250, and to this may be added Rs. 1,000 to cover the insurance on books and apparatus. The renewal of plant and apparatus must be considered as part of the annual expenses of departments.

The following is a summary of the annual expenditure. In the first column will be found the annual expenditure when the whole of the six departments are first opened, in the second the maximum charge under each heading:—

At commencement. Probable maximum.

	Rs.	Rs.
Salaries of staff	1,39,500	1,47,500
Pension and retiring allowance fund	18,500	20,000
Demonstrators' salaries	10,000	20,000
Salaries of office staff	4,500	6,000
Workshop staff	3,000	3,000
Departmental expenses	45,000	45,000
Library	7,500	7,500
Office expenses, postage and printing	4,000	4,000
Medical charges	400	700
Care of grounds	3,000	3,000
Repairs to buildings	4,000	6,750
Insurance	2,500	3,250
Total	<u>2,41,900</u>	<u>2,66,700</u>

No provision has been made for a re-building fund, but the amount set aside for repairs is sufficient to keep the buildings in good condition. However, as the life of such buildings is at least 100 years, it would not be necessary to set aside more than Rs. 1,000 a year for the purpose as the total amount which would accumulate in 100 years at 4 per cent. would be about Rs. 12,00,000.

It will be noticed that no provision has been made for scholarships, but at the same time it is proposed that there should be no fees, and that the charge for the use of quarters should be as moderate as possible. It appears to be the universal experience of teaching institutions in India that scholarships do not attract the right class of student, and after visiting nearly all the important educational institutions in the country and consulting with leading educationalists the Director has formed the opinion that expenditure on scholarships has rarely produced permanent results. It would be perfectly useless for the Institute to turn out a number of students, who not only could not support themselves during their course of study, but who were unable to wait till appointments could be found for them. Provision has, however, been made for the payment of twelve or thirteen demonstrators at the rate of Rs. 100 to Rs. 150 per month, and as it is unlikely that the number of students entering the Institute will exceed thirty in each year for some time, about half the third year students will be paid if they are willing to work for their pay.

There is no doubt that at the outset the majority of the students will be absorbed by the teaching profession, and it is as well that this should be so, for until the standard of teaching in the Indian colleges is raised, the Institute will have to put up with inferior students, with the exception of such as have been trained in the few first class colleges which now exist. It is to be hoped that Indian professors will sometime spend their leave in study at the Institute, and that students will receive a preliminary training there before proceeding to Europe at Government expense. It is particularly desirable to attract to the Institute students who have good business connections, and who will have a direct means of finding an outlet for their talents. If the Institute is to play a direct part in the establishment of industries in India it must be through the agency of men of this class, and probably, with rare exceptions, of this class only. In the opinion of the Director it is therefore of more importance, in selecting students, to enquire carefully into the object with which they propose to study in the Institute, and the means at their disposal of attaining their object, than to consider their academic attainments.

A considerable number of applications for admission have been received by the Director, and many of the applicants appear to be well qualified so far as may be judged from the accounts which they give of their training.

In selecting the subjects to be dealt with in the six departments of the Institute certain guiding principles must be kept clearly in view. In the first place it must not be forgotten that many problems in pure and applied science require for their solution the co-operation of workers in more than one branch of science. The different departments in such an institution are not merely detached units, but are interdependent, and on their close association and co-operation depend the success of the whole organization. The selection must, also, be made with due regard to the particular needs of India, and care must be taken that money is not wasted in duplicating subjects which are well provided for in other institutions. Finally, attention must be directed to the needs of students, the majority of whom will attend courses of instruction in the Institute with a view to making some branch of science their profession.

It would be a much easier task to select subjects for a dozen or more departments, and this becomes clear when we review the list of departments which would constitute a fairly complete faculty of pure and applied science. The annual cost of such a faculty would be some thirteen lakhs, or one hundred thousand pounds, a sum which is large only from an Indian standpoint, but would not be thought excessive in other parts of the world. The following is a rough enumeration of the more important departments and sub-departments:—

- 1 Mathematics.
- 2 Physics.
- 3 Astronomy.
- 4 Engineering, i civil, ii mechanical, iii electrical.
- 5 Chemistry, i inorganic, ii physical, iii organic, iv applied (manufacturing), v analytical, vi agricultural, vii physiological, etc.
- 6 Botany, i systematic and physiological, ii economic.
- 7 Zoology, i general, ii parasitology, iii entomology, etc.
- 8 Physiology.
- 9 Bacteriology, i pathological, ii economic.
- 10 Psychology.
- 11 Sociology and Economics.
- 12 Metallurgy.
- 13 Textile manufacture, dyeing and colour printing.
- 14 Tanning and leather manufacture.
- 15 Agriculture.

No attempt has been made to set down the subjects in their even approximate order of importance, but merely to indicate the range from which the selection must be made. The Provisional Committee and the Members of the Council, at their meeting on the 9th November, came to a definite decision with regard to four subjects, and though one professor remains to be appointed, considerable progress has been made with the laboratories. The four subjects are, general chemistry including inorganic and physical chemistry, organic chemistry, applied chemistry, and electro-technics. The Director will hold the chair of general chemistry, Professor Alfred Hay, D.Sc., M.I.E.E., has been appointed to the chair of electro-technics, and Professor Norman S. Rudolf, M.Sc., F.I.C., has been appointed to the chair of applied chemistry.

The need for the establishment of a strong school of chemistry has been clearly recognized since the scheme first began to take form. The original scheme for a 'University of Research,' which was drawn up by the late Mr. J. N. Tata's Committee, provided for two professors of chemistry, for two junior professors, and for a professor of technology, or for five chemists out of a total of seven members which formed the staff of the 'Scientific and Technical Department.' So far as chemistry is concerned, the proposals which were accepted by the Provisional Committee are practically identical with those originally put forward by Mr. Tata's Committee. There is no doubt that the departments of chemistry will attract a considerable number of students, for no other subject plays a more important part in the solution of industrial problems. It is unfortunate that a very large proportion of those Indian students who take science subjects for their university degree select physics as a special subject. The reason of this is probably to be found in the nature of the university examinations, which are of an unsatisfactory character. However, students will no doubt come to the conclusion that their university course should lead to something beyond the mere acquisition of a degree, and in the future we may hope to see an increase in the number of graduates in chemistry.

In connection with the three main departments of chemistry it is proposed to develop sub-departments of agricultural chemistry, tinctorial chemistry, metallurgical chemistry, etc. These sub-departments may in time develop into separate departments, but at present it would be impossible to establish a full department of dyeing, which is inseparably bound up with textile manufacture, and colour printing, and could hardly exist apart from a school of engineering and a school of design. Similarly, metallurgy, in the modern sense of the word, could only be dealt with in

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several departments, each dealing with one or more trades, and is inseparably connected with mechanical engineering. The formation of a department of agriculture will be considered later.

Electrical engineering was selected as a subject for one of the departments for the following reasons. An engineering department is an essential constituent of a faculty of applied science, and that one member of the staff of the Institute should be an engineer has always been considered to be absolutely necessary. As it was possible to take up only one branch of engineering, electrical engineering was selected rather than mechanical engineering, for the reason that little attention has as yet been paid to the subject in Indian colleges, and there is a growing demand for electrical engineers. Further, the existence of the Cauvery power scheme gives Bangalore certain advantages as a centre for the study of the subject. It will be necessary for students to have attended a full course in one of the engineering colleges before entering the department; but it may be possible to arrange a complete course of study for local students, by co-operating with the Mysore Public Works Department and the Bangalore Central College.

The workshops which are attached to this department will be under the control of the Professor of Electro-technics, and will furnish a means of training students in workshop practice. Every student of chemistry should have passed through a course of workshop practice at some time during his career, and this appears to be particularly important in the case of Indian students.

It remains for the Council to arrive at a decision as to the two remaining subjects to be taken up. In the opinion of the Director economic bacteriology is next in importance since a vast number of industries involve fermentation processes and the subject has as yet been but little studied in India. The existence of a bacteriological laboratory in the Institute will also in all probability attract workers in other branches of the subject, particularly in pathological bacteriology. It will not be necessary to arrive at a decision as to the remaining subject for a year at least, and in the meantime the Council will be able to obtain more information, on the many points on which their decision must be based. The Director considers it sufficient at the moment to point out that it is highly desirable that there should be a department of agriculture in the Institute, so as to maintain a close contact with India's most important industry. Nearly all Indian industries are ultimately connected with agriculture, and the staff of a department of agriculture would be

able to co-operate with the staff of the other departments in the conduct of technical experiments and enquiries.

*IV.—The Buildings and Equipment of the Institute.*

The scheme for the annual expenditure is based on the principle that all liabilities which cannot be immediately liquidated are to be covered by an adequate sinking fund, so that at the end of his term of office the Director will leave to his successor no legacy of debt to handicap his administration. It would be easy to disregard the liability incurred in respect to the present Director's pension, and to consider the pension as a first charge on the funds of the Institute after his resignation, or to cut down the amount of the annual sinking fund for repairs. Such proceedings could not for a moment be considered as sound finance. Similarly it would be possible to erect cheap and temporary buildings for the laboratories, bungalows, students' quarters etc., but such buildings would require constant repair, and would prove a very bad investment so far as future Directors and Councils were concerned.

It is important not only from the economic standpoint that the workmanship in the construction of the buildings should be of high quality, but also from what may be regarded as the ethical standpoint. It is not the least important function of the Institute to train students in accurate methods of thought and work; and both in construction and organization, the Institute itself should be a model of efficiency. Japan is constantly being pointed out as the model which India should follow; but while India envies that country's success, she pleads the invalid excuse of poverty as a reason for not adopting the essentials of the policy which has led to success. Amongst these essentials, the appreciation of the value of good workmanship, and attention to details, are far from being the least important, and the sooner India realises this fact the better it will be for the country.

The details of the scheme for the buildings and equipment of the Institute, which has been drawn up by the Director in consultation with his colleagues and the architects, may now be considered. The estimate (pp. 58, 59) for the construction of the buildings is based on the actual contract which has been entered into between the Director, acting on behalf of the Council, and Mr. T. C. W. Skipp. A sufficient amount of work has been completed and measured to show that it will be possible to complete the work within the estimated cost, even allowing for slight modifications in the details of the specifications.

With the exception of the central building, which will contain the library and offices in the east wing and accommodation for the two additional departments in the west wing, the buildings will be quite plain in design. The central building will be of dressed stone, and will consist of two wings and a central tower, which will serve as a water tower. The external walls of the larger buildings will be constructed in coursed rubble masonry, and the interior walls of pressed wire cut bricks. The smaller buildings will be constructed entirely of brick, pointed on the outside. The bricks used throughout the buildings are manufactured and supplied under contract by the South India Industrials, Ltd., and are of the same quality as those which are being used in the construction of the new physical laboratories of the Central College, Bangalore, by the Mysore Public Works Department.

The contract rates for the construction of the buildings have been carefully compared with the contract rates for other buildings in Bangalore. It is impossible for obvious reasons to publish information which has been communicated confidentially, but a comparative statement, which has been prepared for the information of the Council, shows that the buildings of the Institute will not be unduly expensive.

The cost of the buildings and equipment for six departments is estimated at about Rs. 19,00,000, but expenditure to the total amount of Rs. 16,00,000 only has up to the present been sanctioned. The details of the estimate are shown in the table attached to this section of the report, the cost of the items already sanctioned and of those awaiting sanction appearing in different columns (*a* and *b*). Reference to the table on page 41 will show that the building and equipment fund will probably amount to Rs. 17,00,000 before the end of the current financial year and as the main building will not be completed for upwards of two years, the financial position of the Institute is quite sound.

It has already been stated that the central building will contain the library, offices, and accommodation for the two departments the nature of which has not yet been determined upon. The library will occupy the first floor of the east wing, and ultimately the whole of the first floor, and even of the ground floor as well. The library forms a very important department of the Institute, and as it is becoming difficult, or even impossible, to obtain complete series of journals, too great care cannot be taken to preserve them. The council room, offices, records room, and probably also the bookbinders' shop will occupy the ground floor of the east wing. The construction of the building is such that the

ground and first floors of the west wing can be built as large halls, which can be divided up by partition walls to suit the needs of the departments which will occupy them. The arrangement is a satisfactory one from several points of view. It is due to the dignity of the Institute that at least one of the buildings should have some pretensions to architectural beauty. It is also important that the library should be housed in a particularly well constructed building, and that it should be possible to increase the accommodation for the library to keep pace with its growth. It would have been possible to construct only the tower and one wing of the central building, but the result would have been unsightly. Further the cost of constructing the second wing would have been very heavy, as it would have involved the re-erection of temporary works required for the construction of the whole of the buildings, and it is quite certain that no contractor would accept the present contract rates for the construction of the building in sections. Under the present arrangement space will be available for laboratories as soon as the professors are appointed.

On referring to the building plan it will be seen that the laboratories of general, organic, and applied chemistry are situated to the east of the central building, and that the electrical laboratory is to the west of it. The space to the south of the central building is also reserved for laboratory buildings, and to the north is an open *maidan*. The laboratories are so designed that they can be enlarged by adding to the wings, which extend backwards, away from the main building, without affecting the architectural appearance. Each department being situated in a separate building, or in a wing of a building, can expand without interfering with neighbouring departments.

The departments of general and organic chemistry occupy the building immediately to the east of the central building. The northern half of the building will be devoted to general chemistry, but will contain a lecture room, preparation room, and apparatus room which will be common to the two departments. The laboratories are of simple design and greater economy has been observed in their construction and equipment than would be thought desirable in a British University. The use of white tiles, for instance, has been restricted to the lining of fume cupboards. However, a description of the details of construction cannot be included in this report. It is only necessary to add that accommodation has been provided for about thirty students, and that increased accommodation can be obtained without incurring great expense by adding to the central and south wings.

The department of applied chemistry will occupy the building to the south-east of the central building. The laboratory has been designed by Professor Rudolf. The southern portion is mainly occupied by a 'hall of applied chemistry' containing types of the more important pieces of machinery employed in the operations of manufacturing chemistry, and designed so as to enable students to obtain actual practice in their use, working on a comparatively small scale. The northern half of the building contains the lecture room, preparation room, professor's room, etc. This laboratory is unique in design, and will make it possible for students to gain experience which could otherwise only be obtained in chemical works. It is proposed to erect a shed with a chimney forty feet high to the east of the laboratory for furnace work, and such dangerous operations as tar distillation.

The department of electro-technics, to which are attached the workshops, has been designed by Professor Hay. The main feature of the building is a machine room, 70 feet long and 30 feet wide, which occupies the north-east portion of the building. This room will contain examples of all the important types of motors, generators, and other forms of electrical machines. A gantry running the whole length of the room will facilitate the handling of heavy machinery. Between the south end of the room and the main entrance is a general testing laboratory, and in the wing to the west of it are the battery and transformer rooms, professors' rooms, and standards room, the latter containing standard instruments. To the south of the main entrance are the lecture and preparation rooms, the photometric galleries, and two rooms as yet unassigned to any particular purpose. The workshops, and the yard connecting them, form an extension of the central wing of the building.

The scheme provides for the construction of two blocks of quarters for students, each containing thirty-six rooms ( $12 \times 13$  ft.), and four mess rooms with small store rooms and kitchens attached. Each block of quarters consists of two rows of rooms with the mess rooms at the ends of each row. The rows of rooms stand back to back, and the latrines and baths, which are connected with the quarters by covered verandahs, are between them. It is proposed to assign a separate room to each student, and two rooms in each set of nine can be connected so as to form a bedroom and sitting room for a demonstrator.

The cost of the students' quarters in the Institute has been carefully compared with the cost of quarters in other institutions, and a statement, based on information which must be considered as confidential, has been

prepared for the Council. In calculating the cost per student of students' quarters it appears that it is usual to allow for two students occupying one room about twelve feet square, but that two students should actually occupy one room appears to be by no means customary. The only fair method of comparison is to consider the actual cost in relation to the accommodation provided, and on this basis the cost of the students' quarters for the Institute compares favourably with the cost of similar buildings elsewhere. It has been suggested that the rent charged to students in other institutions indicates that the cost of constructing the quarters must have been very small. It appears however that such information is likely to be unreliable. The statement that the students' quarters provided for in the scheme for the Institute will accommodate at a minimum 72 students, or 64 students and 8 demonstrators, makes it appear that they are much more expensive than are the students' quarters in other institutions. Careful analysis shows, however, that this is by no means the case.

Bungalows are provided for the Director, five professors, four assistant professors, the librarian, and two European subordinates, but up to the present the construction of the bungalows for the Director, three professors, one assistant professor, and the European subordinates only has been sanctioned. The bungalows for the Director and the professors are two-storied. All the bungalows are of modern design, and are fitted with modern sanitary appliances. While this adds to their cost, the cost of sweepers' verandahs and staircases is saved, so that the total cost is not greater than that of bungalows constructed on the usual Indian plan.

After consulting the leading authorities on sanitation in India the Director advised the Provisional Committee to adopt the water-carried system, and construct a complete sewer system for the drainage of the buildings. A contract was entered into with Messrs. Pallonji Edulji & Sons, of Bombay, and the greater part of the main drainage scheme was completed before the end of 1908. The system consists of two septic tanks connected with sewers which drain the buildings to the east and west of the site. The effluent will be raised by means of small pumps and distributed over grass land.

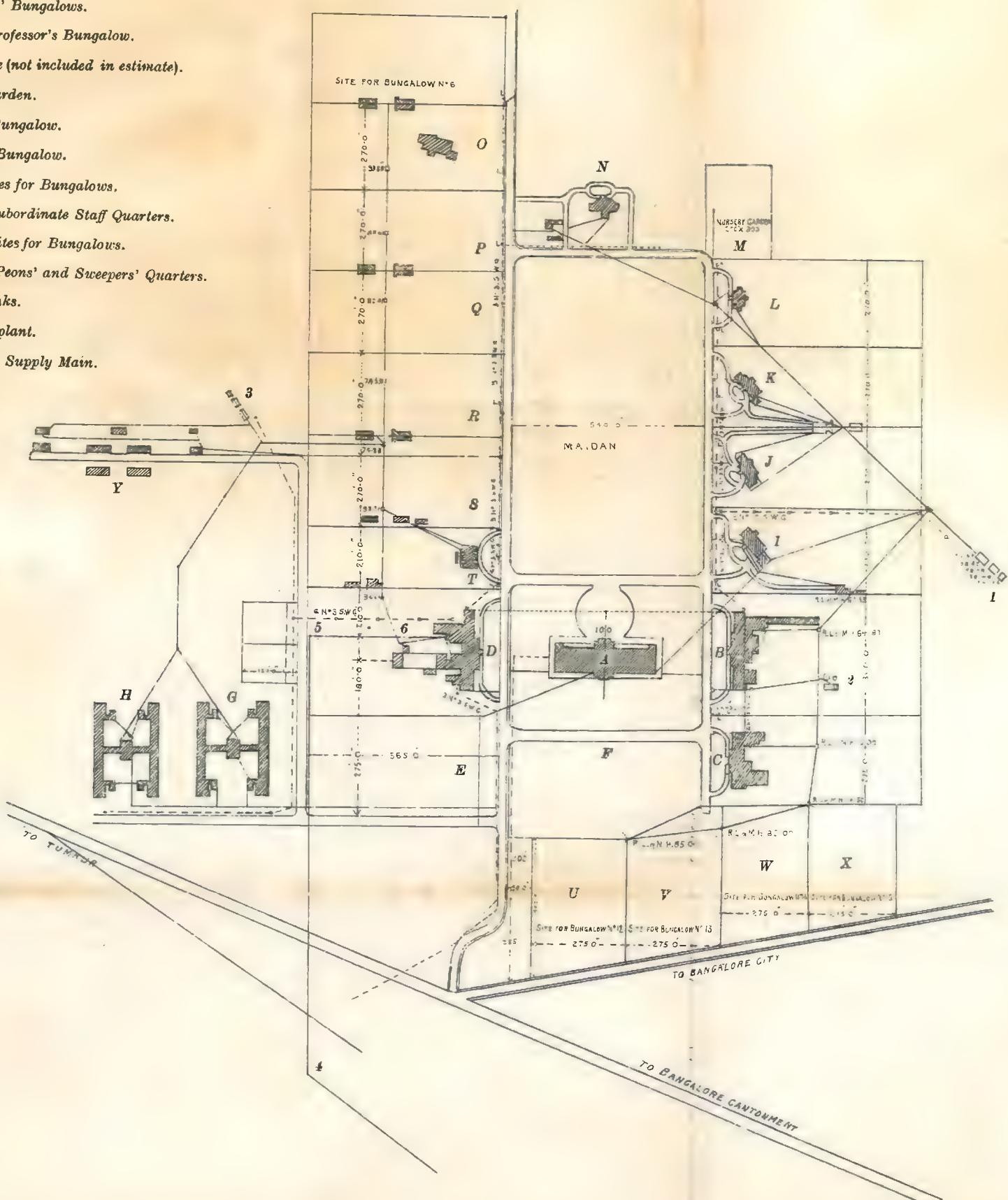
It was originally suggested by the Mysore Public Works Department that the Institute should draw a supply of unfiltered water from the rising main to the west of the filter beds. Settling tanks and a pump-house were to be constructed on the south side of the Tumkur Road, and

# INDIAN INSTITUTE OF SCIENCE.

BANGALORE.

## PLAN OF BUILDINGS.

- A. Central Building.
- B. Laboratory of General and Organic Chemistry.
- C. Laboratory of Applied Chemistry.
- D. Laboratory of Electrical Technology and Workshops.
- E, F. Spaces reserved for laboratories.
- G. Students' Quarters, Block No. 2
- H. Students' Quarters, Block No. 1
- I, J. Professors' Bungalows.
- K. Assistant Professor's Bungalow.
- L. Guest House (not included in estimate).
- M. Nursery Garden.
- N. Director's Bungalow.
- O. Professor's Bungalow.
- P, Q, R, S. Sites for Bungalows.
- T. European Subordinate Staff Quarters.
- U, V, W, X. Sites for Bungalows.
- Y. Maistries', Peons' and Sweepers' Quarters.
- 1, 3. Septic Tanks.
- 2. Gas making plant.
- 4, 5, 6. Electric Supply Main.



the water was to be pumped through a high-pressure Jewell filter to the storage tank in the tower of the main building. As a part of this scheme a four-inch main was laid from the main to a temporary tank, which was constructed near the south end of the electrical laboratory, and the unfiltered water which is used by the contractor on the buildings is raised into this tank by means of a centrifugal pump driven by an oil engine. It is now proposed to supply the Institute with filtered water direct from the water works, an arrangement which will be much more convenient to the Institute than that originally proposed. The detailed estimate for the new scheme has not yet been worked out, but the amount of it will be less than that required to carry out the original scheme.

In the original scheme for the supply of electricity to the Institute the cost of the main from the transformer station to the Institute was to be shared between the Institute and the water-works. It is now pointed out by the Chief Electrical Engineer that this will introduce a complication, and he proposes that the cost of the main should be borne by his department, and that the Institute should be treated as an ordinary consumer of power. The arrangements for the distribution of electricity on the site, and for the wiring of the laboratories and other buildings have been carefully worked out by Professor Hay.

The gas installation was purchased and erected by order of the Provisional Committee in the year 1908. The installation consists of a Mansfield oil-gas plant, with two generators, and a storage gasometer holding 2,000 cubic feet. The plant is arranged to supply gas at a pressure of eight inches of water. The cost of mains to the three laboratory buildings and to the central building is allowed for in the estimate. The cost of the work inside the laboratories is included in the estimate for the laboratory fittings.

The construction of the roads and the levelling of the ground to the north of the central building are nearly finished. The roads have been thoroughly well made, and have V-shaped stone gutters at the sides, except on the east side of the *maidan* where there is a large box drain. The extent of the roads is shown on the site plan. It is proposed to use galvanized iron wire and iron standards for fencing, but it is to be hoped that funds will ultimately be forthcoming to enable the Council to erect entrance gates worthy of the Institute and to construct a wall along the southern boundary.

**ESTIMATE OF THE COST OF BUILDINGS, EQUIPMENT, &c.**  
 (a) Sanctioned; (b) Awaiting Sanction.  
 Amounts in Rupees.

No.		Foundation.	Superstructure.	Fittings.	Total Cost of Building.	Apparatus, Plant, Books.	TOTAL.
		(a)	(b)	(a)	(b)	(a)	(b)
1	Central building E. Wing and tower for Library and offices.	18,339	2,46,067	..	2,64,406	..	75,000
2	Central building W. Wing for unassigned departments.	7,623	1,39,145	..	1,46,768	..	1,00,000
3	Departments of General and Organic Chemistry.	16,514	90,339	..	1,37,553	..	50,000
4	Department of Applied Chemistry.	6,578	15,203	..	88,561	8,000	43,247
5	Department of Electro-technics including workshops.	10,930	81,352	..	1,19,092	..	97,000
6	Bungalow No. 1 ..	2,990	21,760	..	24,650	..	24,650
7	1, 2 ..	2,890	21,760	..	24,650	..	24,650
8	1, 3 ..	2,710	13,528	..	16,238	..	16,238
9	1, 5 ..	2,812	28,465	..	31,277	..	31,277
10	1, 6 ..	2,890	21,760	..	24,650	..	24,650
11	1, 7 ..	2,890	21,760	..	24,650	..	24,650
12	1, 8 ..	2,710	13,528	..	16,238	..	16,238
13	1, 9 ..	2,710	13,528	..	16,238	..	16,238
14	1, 10 ..	2,710	13,528	..	16,238	..	16,238
15	1, 11 ..	2,710	13,528	..	16,238	..	16,238

16	,, 12	..	..	2,890	..	21,760	..	..	24,650	..	..	..	..	24,650	..
17	Out-houses to bunglow No. 1.	900	..	3,735	..	..	..	4,635	..	..	..	..	4,635	..	..
18	,, 19	,, 2&3	1,800	..	7,470	..	..	9,270	..	..	..	..	9,270	..	..
19	,, 19	,, 5	646	..	5,780	..	..	6,426	..	..	..	..	6,426	..	..
20	,, 19	,, 6 & 7	1,800	..	7,470	..	..	9,270	..	..	..	..	9,270	..	..
21	,, 19	,, 8 & 9	1,800	..	7,470	..	..	9,270	..	..	..	..	9,270	..	..
22	,, 19	,, 10 & 11	1,800	..	7,470	..	..	9,270	..	..	..	..	9,270	..	..
23	,, 19	,, 12,	900	..	3,735	..	..	4,635	..	..	..	..	4,635	..	..
24	European Subordinates' quarters including out-houses.	2,916	-	16,358	..	..	..	19,274	..	..	..	..	19,274	..	..
25	Secretary's house	..	..	500	..	6,179	..	..	6,679	..	..	..	..	6,679	..
26	Dispensary	..	..	500	..	5,500	..	..	6,000	..	..	..	..	6,000	..
27	Students' quarters, Block I. ..	9,860	..	48,464	..	3,000	..	61,324	..	..	..	..	61,324	..	..
28	,, 19	II. ..	9,860	..	48,464	..	3,000	9,860	51,464	..	..	..	9,860	51,464	..
29	Maistries, servants, &c.	..	6,046	..	22,938	..	..	26,984	..	..	..	..	28,984	..	..
30	Police quarters	..	..	800	..	7,200	..	..	8,000	..	..	..	..	8,000	..
31	Gas installation	..	..	..	..	..	..	..	..	..	..	..	20,000	..	..
32	Water-supply	..	..	..	..	..	..	..	..	..	..	..	35,000	..	..
33	Drainage system	..	..	..	..	..	..	..	..	..	..	..	27,000	..	..
34	Electric mains and wiring	..	..	..	..	..	..	..	..	..	..	..	37,000	..	..
35	Roads, fencing, levelling	..	..	..	..	..	..	..	..	..	..	..	68,780	..	..
36	Supervision, architect's fees, &c.	..	..	..	..	..	..	..	..	..	..	..	1,10,000	..	..
	TOTAL	..	..	..	..	..	..	..	..	..	..	..	15,90,242	3,17,570	

*V.—The Statement of Receipts and Expenditure up to the 31st March, 1910, and Budget for the year 1910-11.*

In accordance with the original instructions received from His Excellency the Patron, the building accounts of the Institute up to the 31st March, 1909, were audited by the Examiner, Public Works Accounts, Madras. The audit of the general accounts was commenced by the Examiner, Local Fund Accounts, Madras, in April of the present year, and in accordance with orders received before the work was completed, he also undertook the audit of the building accounts for the year 1909-10. The reports of the Examiner, Public Works Accounts, and of the Examiner, Local Fund Accounts, have been circulated to the members of the Council. They contain no remarks which call for special comment in this report.

The books of the Institute are kept on the double entry system, a method which has been approved by the Examiner, Local Fund Accounts, who will conduct the audit in future years. The cash balances are checked every month by the Director. Accounts have been opened in the names of the members of the Finance Committee with the National Bank of India, Bombay, and with the Bank of Madras, Bangalore, and cheques for amounts above the value of Rs. 100 bear the signature of all three members of the Committee. A separate account has been opened in the name of the Director with the Bank of Madras, Bangalore, and payments of amounts less than Rs. 100 are made by cheques drawn on this account. Payments of amounts less than Rs. 10 are made in cash, and are recorded in a petty cash book. As has been stated in the introduction to this report (p. 38) a special account has been opened with the Bank of Madras in the name of the Director to meet the emergency arising out of the temporary non-existence of the Council and Finance Committee.

The following are the Statements of Receipts and Expenditure prepared under the direction of the Examiner, Local Fund Accounts, Madras :—

**Receipts and Expenditure on account of Initial Outlay from the 1st January 1908 to the 31st March 1909.**

	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.			
Amount spent on Capital Expenditure up to 31st March 1909, as under—												
Furniture .. .. ..	..	3,076	5	3,076	5	0	From Mysore Government ..	5,00,000	0			
Buildings .. .. ..	..	1,65,435	15	1,65,435	15	11	From Government of India ..	2,50,000	0			
Books .. .. ..	..	33,075	14	33,075	14	4	From Madras Govt. 1908-09 ..	50,000	0			
Stock and Stores .. .. ..	..	17,345	10	17,345	10	10	Contribution from Mr. Bedarkar ..	5,000	0			
Electrical Machinery and Equipment .. .. ..	..	15,988	10	15,988	10	6						
Permanent Chemical Apparatus and Instruments .. .. ..	..	2,065	6	2,065	6	0	Surplus of income over expenditure as per Statement II ..	8,05,000	0			
Glass Apparatus and Chemicals .. .. ..	..	4,435	14	4,435	14	0		3,23,336	5			
Sundry debtors as per Balance Sheet .. .. ..	..	57,671	4	57,671	4	6			7			
Less Sundry creditors .. .. ..	..	15,162	14	15,162	14	3						
				42,508	6	3						
<b>CASH ON HAND.</b>												
Account "B" Bank of Madras .. .. ..	..	1,698	2	1,698	2	0						
Current Account, Bank of Madras .. .. ..	..	1,00,088	13	1,00,088	13	5						
National Bank of India, Ltd., Bombay .. .. ..	..	36,989	13	36,989	13	5						
Imprest cash with the Director .. .. ..	..	627	5	627	5	11						
				1,39,404	2	9						
Deposit Account, Bank of Madras .. .. ..	..	Rs. 5,00,000.		7,00,000	0	0						
" Yokohama Specie Bank, Rs. 2,00,000.	..			5,000	0	0						
Government Promissory Note .. .. ..	..						8,44,404	2	9			
								11,28,336	5	7		
										11,28,336	5	7

**Revenue and Expenditure account from the 1st January 1908 to the 31st March 1909.**

	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.
Professors' Salaries .....	60,390	3	8	Contribution from Messrs. D. J. and R. J. Tata, from 1st January 1908 to 31st March 1908.	31,250	0	0		
,, Travelling Allowances .....	5,413	14	0	For 1908-09 .....	1,25,000	0	0		
,, House Allowances .....	4,500	0	0	Contribution from Government of India for 1907-08, " " " " " 1908-09.	1,75,000	0	0		
Office Rent .....	70,304	1	8	Contribution from " " Government for 1908, 1st January to 31st March 1908.	12,500	0	0		
Postage and Telegrams .....	1,350	0	0	For 1908-09 .....	50,000	0	0		
Office Expenses .....	387	5	9	Rent from Shops on site .....	16	0	0		
Salaries of Office Establishment—				Sale of Tender Forms .....	150	0	0		
Clerks .....	852	8	0	Interest and Discount .....	5,024	2	5		
Interior servants .....	718	13	8						
Exchange charges account .....	1,571	5	8						
Law Charges .....	44	3	3						
Medical Charges .....	322	0	0						
Laboratory working expenses .....	251	9	10						
Stationery and Printing .....	71	6	8						
	1,111	15	6						
	75,603	12	10						
Surplus of income over Expenditure carried to Capital Grant, Statement I.	3,23,336	5	7						
	3,98,940	2	5						
	3,98,940	2	5						

**Balance-sheet, dated the 31st March, 1909.**

Liabilities,	Rs. A. P.	Rs. A. P.	Assets.	Rs. A. P.	Rs. A. P.
SUNDRY CREDITORS.			By Amount spent on capital expenditure Property A-C (as per Statement I)	2,41,423 12 7	
Messrs. Mansfield and Sons ..	7,750 0 0				
The Electric Construction Co., Ltd.	1,044 6 0				
Tender Deposits Accounts ..	4,500 0 0				
OUTSTANDING EXPENSES ACCOUNT.					
Mr. Miller's pay for February and March, 1909 ..	1,365 9 0				
Salaries of building staff for March 1909 ..	365 9				
Messrs. Marshall Sons & Co. ..	218 6 3				
, J. B. Forster & Co ..	235 5 0				
, Higginbotham & Co. ..	49 4 0				
Capital Fund (2s per Statement I) ..	15,162 14 3				
	11,28,336 5 7				
	11,43,499 3 10				
			Cash at Banks, on current account Imprest Cash, and Fixed Deposits as per Statement No. I ..	57,671 4 6	
				8,44,404 2 9	
				11,43,499 3 10	

**Receipts and Expenditure on account of Initial Outlay from the 1st April 1909 to the 31st March 1910.**

	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
Initial expenditure up to 31st March 1910 as under—				
Furniture .. .. ..	5,299 8 0	4,10,014 8 4	Building a/c ..	11,28,336 5 7
Buildings .. .. ..	37,291 8 4	13,840 15 3	Less Adjustment by credit to Building a/c ..	39 0 0
Books .. .. ..	32,766 10 6	5,216 7 6		11,28,375 5 7
Stock and Stores .. .. ..	6,263 3 3	6,263 3 3	Capital Grant from Madras Government ..	150 0 0
Electrical Machinery and Equipment .. .. ..	343 13 3	343 13 3	.., , Bombay Government ..	
Permanent Chemical Apparatus and Instruments .. .. ..	6,822 4 9	6,822 4 9		1,00,000 0 0
Glass Apparatus and Chemicals .. .. ..	726 15 2	726 15 2	Surplus of Income over Expenditure as per Statement V ..	1,68,886 7 0
Miscellaneous Equipment Account .. .. ..	472 13 3	472 13 3		
Workshop Machinery and Equipment .. .. ..	330 2 7	330 2 7		
Account .. .. ..	315 4 7	315 4 7		
Chemical Laboratory Fittings and Equipment .. .. ..	251 11 6	251 11 6		
Book Binders' Machinery and Tools .. .. ..	1,244 8 7	1,244 8 7		
Applied Chemistry Laboratory Equipment .. .. ..	94 8 0	94 8 0		
Binders' Materials Account .. .. ..	1,14,251 15 6	1,14,251 15 6		
Library Equipment and Workshops .. .. ..	13,004 15 10	13,004 15 10		
Electrical Laboratory and Workshops Equipment .. .. ..	5,21,294 14 10	5,21,294 14 10		
Electrical Lighting and Power Lines Account .. .. ..	1,01,246 15 8	1,01,246 15 8		
Sundry debtors as per Balance Sheet .. .. ..				
Less sundry creditors .. .. ..				
CASH ON HAND.				
Account 'B' Bank of Madras .. .. ..	477 0 6	477 0 6		
Bank of Madras .. .. ..	99,854 11 7	99,854 11 7		
National Bank of India, Ltd., .. .. ..	69,660 1 11	69,660 1 11		
Imprest Cash with the Director .. .. ..	78 0 1	78 0 1		
Fixed Deposit with Bank of Madras, 4,00,000 .. .. ..	1,70,069 14 1	1,70,069 14 1		
Yokohama Specie Bank, 2,04,500 .. .. ..	6,04,500 0 0	6,04,500 0 0	7,74,569 14 1	
			13,97,111 12 7	
				13,97,111 12 7

Revenue and Expenditure Account from the 1st April 1909 to the 31st March 1910.

\* These securities are to be vested in the Treasurer of Charitable Endowments for Bombay. They cannot therefore be considered as an asset of the Council.

Balance-sheet, dated the 31st March, 1910.

It appears to the Director that the foregoing statements require little explanation beyond such as is to be found in the previous sections of the report. The origin of the funds available for expenditure has already been considered in detail, and such further information as may be required can be supplied to members of the Council at short notice.

It will readily be realized that it is no easy matter to draw up a budget for the current financial year, for the amount of expenditure which will be incurred under some of the most important headings is entirely dependent on the rate at which buildings can be erected. It is only possible to draw up a statement showing the probable expenditure under certain qualifying conditions.

An estimate of the recurring expenditure for the year 1909-10 was set down in the Report presented by the Director at the meeting of the Members of the Council held on the 9th November at Rs. 73,500. This estimate was arrived at by allowing for a certain general increase over the expenditure for the previous year, and it must be considered to be a matter of chance that it agrees so closely with the actual expenditure. In the following table will be found in parallel columns the expenditure for the financial year 1909-10, and estimates for the financial years 1910-11 and 1911-12. The columns headed by the letters A and B contain the figures given on page 47 of this Report, and represent the estimated expenditure when the six departments are first opened, and after some years of working, on the basis laid down in this Report

	1909-10.	1910-11.	1911-12.	A.	B.
	Rs.	Rs.	Rs.	Rs.	Rs.
Salaries etc., of professorial staff ..	60,816	74,000	1,00,000	1,39,000	1,47,500
Retiring allowance fund ..	5,789	4,000	7,500	18,500	20,000
Director's pension sinking fund ..	..	37,500	8,000		
Demonstrators' salaries ..	..	..	3,000	10,000	20,000
Salaries of office staff ..	1,889	2,000	2,250	4,500	6,000
Servants' wages ..	913	1,000	1,500		
Office expenses ..	238	250	300		
Law charges ..	147	..	..		
Postage and telegrams ..	239	250	300	4,000	4,000
Stationery and printing ..	705	800	1,000		
Exchange charges ..	74	..	..		
Office rent ..	1,025	1,025	..	..	..
Medical charges ..	390	390	390	400	700
Laboratory expenses ..	702	5,000	20,000	45,000	45,000
Library ..	..	..	..	7,500	7,500
Care of grounds ..	..	..	..	3,000	3,000
Repairs to buildings ..	..	..	..	4,000	6,750
Insurance ..	..	..	1,000	2,500	3,250
H. E. the Patron's visit ..	305	..	..	..	..
Laying corner stone ..	..	2,000	..	..	..
Contingent ..	..	1,785	4,760	..	..
TOTAL ..	73,182	1,30,000	1,50,000	2,38,400	2,63,700

It is probable that such progress will be made with the laboratories as to make it advisable to consider the appointment of a professor of organic chemistry and two assistant professors before the end of the current financial year, and of a professor to one of the departments still under consideration and of the librarian in the following October. The expenditure under the first heading is calculated on the supposition that such appointments will be made.

The amount set aside for retiring allowances during the year 1909-10 is for the period commencing the 1st January 1908, and therefore exceeds the amount for the year 1910-11. The provision of a sinking fund to cover the liability for the Director's pension has been referred to on pages 44 and 52. The sum of Rs. 37,500 is the amount which should have accumulated between the 16th November, 1906, and the 31st March, 1911, at the rate of Rs. 8,000 a year at 4 per cent. compound interest. In the year 1911-12, and in subsequent years the amount to be added to the fund will be Rs. 8,000.

Under the majority of the remaining headings a margin is allowed over the expenditure for the past financial year. The expenditure under the heading laboratory expenses will certainly not be exceeded even if phenomenal progress is made with the buildings. As, however, the main object of the budget is to enable the Council to obtain an idea as to the extent to which the income will exceed the expenditure during the next two years, a wide margin has been allowed. Nothing has been budgetted for current expenditure on the library, for since journals have an increasing value, and the expenditure incurred in purchasing them must be transferred at the end of each year to capital account, all expenditure under this heading may for the present be looked upon as initial expenditure.

Certain expenses were incurred in connection with the visit of His Excellency the Patron to the Institute in November last. It is proposed to lay the corner stone of the central building towards the end of the present year, and the sum of Rs. 2,000 has been budgetted to meet the expenses of decorating the site, erecting a platform, etc.

It appears certain that the total recurring expenditure during the current year will not exceed Rs. 1,30,000, and that during the financial year 1911-12 it will not be possible to spend more than Rs. 1,50,000. These figures have been made use of in the table on pages 41 to 43 for the purpose of calculating the amount which will be available for initial expenditure within the next two years.

*VI.—Proposals regarding the completion of the Scheme.*

It has been shown that the amount available for initial expenditure before the 31st March 1912 will be about Rs. 18,00,000, and it is equally certain that the income of the Institute during the financial year 1912-13 will exceed the expenditure by Rs. 50,000. Should it be possible, however, to raise the additional sum of Rs. 1,00,000, the six professors required for the completion of the scheme may all be appointed before the end of that financial year. In any case the Council is in a position to push on with the building programme, and it need not be pointed out that the shorter the period over which building operations extend the greater will be the economy with which they can be carried out.

The Director recommends that the construction of the furnace shed for the applied chemistry laboratory, of one additional professor's bungalow, and two assistant professors' bungalows should be sanctioned, and that work on them should be commenced as soon as the contractor has workmen available for the purpose. This will involve the expenditure of Rs 67,200. The completion of the second block of students' quarters should also be sanctioned, the work to be commenced in about a year from the present date. The construction of the dispensary and of the house for the head clerk should also be commenced at an early date. The total cost of these works will be Rs. 1,40,000, bringing the sanctioned expenditure on buildings and equipment to about Rs. 17,30,000. There will still remain over a lakh of rupees available before the end of the financial year 1912-13 for the equipment of the two departments which will occupy the west wing of the main building.

*VII.—Conclusion.*

The scheme for the organization of the Institute, of which the details have been considered in this report, has now been before those members of the Council who were members of the Provisional Committee for over two years, and since the Director's Report to the Provisional Committee was published *in extenso* in many of the leading Indian papers, it has been before the public for a like period. That the scheme would escape criticism was neither to be expected nor hoped for, but it is with regret that the Director records the fact that such criticisms as have been brought to his notice have been of an entirely negative character and have been singularly devoid of alternative proposals. The Director and his colleagues on the Council are anxious to expedite the construction of the laboratories and other buildings of the Institute, and to com-

mence teaching and research without delay. They are equally anxious that every economy should be exercised both with regard to initial and to recurring expenditure. They recognize, however, that it is often the case that delay arising out of a desire to examine and re-examine contractors' rates, or the prices of imported articles, often results in the mere transference of a charge from one account to another.

Under Section 33 of the Scheme for the Management of the Institute, within six months of the commencement of each session the Council shall submit to the Patron, to the Vice-Patrons, and to each member of the Court of Visitors a report which shall include:—(a) An account of the work of the Institute, (b) An audited balance sheet, (c) A budget estimate for the current session, (d) A report from the Board of Management in Bombay. Under the By-Laws, which have been drafted and await the approval of the Council and sanction by the patron, the academic and financial year commences on the 1st April and ends on the 31st March, and the session commences on the 1st Wednesday in July and ends on the last *Wednesday* in March. According to this arrangement the sixth week *after the commencement* of the session will be the second week in August, and consequently papers which are to be circulated to the Members of the Court of Visitors should be considered at the July meeting of the Council. As the report now before the Council contains the information included under heading *a*, *b*, & *c*, the Director suggests that it should be circulated together with the report from the Board of Management of the Bombay Properties on the understanding that while they adopt the report as a record of the work of the Institute they do not necessarily either as a body or as individuals endorse the opinions which the Director has embodied in it.

BANGALORE,  
14th July, 1910.

## APPENDIX.

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Report on the progress which has been made with the building and equipment scheme, dated 30th June, 1910.

Since the contract between the Institute and Mr. Skipp was signed, considerable progress has been made with the buildings. The work has been concentrated as far as possible on the laboratories, and the contractor has been instructed to complete a part of each building so that fittings and plant can be placed in position at the earliest possible date. It has been found to be extremely difficult to obtain a sufficiency either of skilled or of unskilled labour, and to retain workmen when once they have earned a little money. The contractor has certainly done his best to collect men from the neighbourhood, and has even imported carpenters from the Punjab. If as much work as might be expected has not been completed it is not his fault. He has shown great enterprise in importing machine tools, and other aids to labour. The Director has much pleasure in reporting that the work of supervision has been carried out to his entire satisfaction by Mr. Miller who has also rendered valuable assistance in making out the orders for goods imported from Europe. It need not be pointed out that this is a matter requiring both care and foresight, for the resources of Southern India are limited, and the cost of importing materials from Bombay and Calcutta is prohibitive.

*Central Building*.—The building has only been completed up to the plinth level, but a considerable amount of material such as dressed stone, has been prepared. The contractor is erecting a Scotch derrick so as to avoid the use of scaffolding, and has installed a stone cutting and dressing plant.

*Books*.—The sets of journals which have been purchased are kept in book cases at the office. Current journals are being bound departmentally.

*Department of General and Organic Chemistry*.—The masonry is nearly completed, the laboratory floors and drains have been laid, and nearly all the steel trusses for the roof have been constructed and are ready to be placed in position.

## APPENDIX.

*Department of Applied Chemistry.*—This building is in the same stage of construction as the laboratory of General and Organic Chemistry.

*Electrical Laboratory.*—This laboratory is in an even more advanced stage of construction than those already referred to. The masonry is practically completed and considerable progress has been made with the construction of the roofs. The workshops were completed early in the year, and they have been used for unpacking and storing machinery which had been ordered for the laboratory. Such of the machines as will be required by Dr. Hay in the equipment of his laboratory are now being placed in position.

The Contractor has been instructed to commence at the end of the north-west wing of the chemical laboratories and of the north-west wing of the electrical laboratory and to complete each building in sections, so that the fitting and equipment may be taken in hand at the earliest possible date. Parts of each building will be ready for use within the year.

*Equipment for the Laboratories.*—A small amount of chemical apparatus has been purchased for use in the laboratory at the office. Professor Rudolf, who has been in Europe since last December, has arranged for the purchase and shipment of the machinery for his department. He reports that several manufacturing firms have presented the Institute with valuable pieces of machinery. A large number of machines for the electrical department have been delivered at the Institute.

*Residences for the Staff.*—The construction of bungalows Nos. 1, 2, 3, 5, and 7 has been commenced. Bungalow No. 3 is nearly complete, and bungalows Nos. 2, 5 and 7 have been carried up to the first floor level. The Subordinate-Staff quarters have been completed and are being used for the offices of the building department. The servants' quarters, stables, etc., for the bungalows under construction have been completed.

*Secretary's House and Dispensary.*—Have not been commenced.

*Students' Quarters, Block No. 1.*—Half of the block is practically complete. The West line of quarters of this block is practically complete and the roofs of the East line of quarters are under construction.

*Students' Quarters, Block No. 2.*—Foundations and plinths of this block have been constructed.

## APPENDIX.

*Servants', Sweepers' Maistries' Quarters.*—About half of the total buildings included in the estimate has been completed, and are being used by the Contractor.

*Police Quarters.*—Have not yet been commenced.

*Gas Installation.*—The gas plant has been erected and a small building containing the gas generator, etc., has been constructed. It yet remains to lay the mains to the laboratories.

*Water Installation.*—As pointed out in the report the scheme for supplying water to the Institute has been reconsidered and a new scheme has been prepared at the suggestion of the Chief Engineer of the Mysore State. The work has not yet been put in hand.

*Electrical Mains and Wiring.*—The main from the city transformer station to the site has been constructed, and no further works have been put in hand.

*Septic Tanks and Sewers.*—The greater part of the drainage scheme has already been completed. It only remains to construct the drains connecting the bungalows with the sewers.

*Roads, etc.*—The main roads have all been nearly completed, as has also the major portion of the work of levelling the maidan.

*Fencing.*—A quantity of iron and wire fence has been ordered from Messrs. A. and J. Main and Co., of Calcutta. The fences would be erected and planting commenced during this monsoon.

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List of Sets of Journals in the Library of the Indian Institute of  
Science.

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**GENERAL.**

- Proceedings of the American Academy of Arts, complete, 43 vols.
- Memoirs of the American Academy of Arts, complete, 17 vols.
- American Journal of Science, complete, 177 vols.
- Journal of the Royal Society of Arts, complete, 57 vols.
- Sitzungsberichte der Berliner Akademie, from 1860, 73 vols.
- British Association Reports, from 1831, complete, 78 vols.
- Comptes Rendus de l'Académie, complete, 148 vols.
- Indian Trade Journal, complete, 16 vols.
- Nature, complete, 82 vols.
- The Planters' Chronicle, complete, 4 vols.
- Royal Society, Philosophical Transactions abridged up to 1800,  
later vols. complete, 193 vols.
- Royal Society, Proceedings, complete, 88 vols.

**PHYSICAL.**

- Poggendorf's Annalen der Physik, from 1824, complete with  
the exception of vols. 31 to 33, 268 vols.
- Poggendorf's Annalen, Beiblatter, from 1877, 33 vols.
- Philosophical Magazine, complete, 155 vols.
- Physikalische Zeitschrift, complete, 10 vols.
- Science Abstracts, Section A, complete, 12 vols.

**ENGINEERING.**

- Transactions of the American Institute of Electrical Engineers,  
complete, 24 vols.
- The Electrician, complete, 64 vols.
- The Electric Journal, (U.S.A.) complete, 6 vols.
- Elektrotechnische Zeitschrift, complete, 30 vols.
- Engineering and Mining Journal, from vol. 71, 14 vols. (vols.  
66-70 awaited).
- Journal of the Iron and Steel Institute, from 1871, 80 vols.
- Proceedings of the Institute of Mechanical Engineers, from  
1847, 60 vols.
- Science Abstracts, Section B, from 1903, 7 vols.

**CHEMICAL.**

- Journal of the Chemical Society, complete, 129 vols.  
 Zeitschrift fur Elektrochemie, complete, 15 vols.  
 Faraday Society's Transactions, complete, 5 vols.  
 Pharmaceutical Journal, from 1841, 73 vols.  
 Zeitschrift fur Physikalische Chemie, complete, 74 vols.  
 Journal of Physical Chemistry, complete, 13 vols.  
 Jahrbuch der Radioaktivität, complete, 6 vols.  
 Journal of the American Chemical Society, including Review of  
     American Chemical Research, complete, 36 vols.  
 American Chemical Journal, complete, 37 vols.  
 Annales de Chimie et de Physique, from 1874, 110 vols.  
 Zeitschrift fur Angewandte Chemie, from 1887, 29 vols.  
 Liebeg's Annalen der Chemie, complete, 185 vols.  
 Zeitschrift fur Anorganische Chemie, complete, 67 vols.  
 Berichte der Deutschen Chemischen Gesellschaft zu Berlin, from  
     1868.  
 Bulletin de la Societe Chimique de Paris, from 1858, 104 vols.  
 Chemisches Zentralblatt, from 1897, 28 vols.  
 Journal of the Society of Chemical Industry, complete, 30 vols.  
 Chemical News, complete, 52 vols.

**BIOLOGICAL.**

- Zeitschrift fur Physiologische Chemie, complete, 66 vols.  
 Biochemical Journal, complete, 4 vols.  
 Biochemisches Centralblatt, complete, 8 vols.

**GEOLOGICAL.**

- The Geological Survey of India, Records and Memoirs, complete,  
     each 38 vols.  
 The Quarterly Geological Journal, from 1858.  
 Transactions of the Mining and Geological Institute of India,  
     from vol. 2.

**AGRICULTURAL.**

- The Agricultural Journal of India, complete, 4 vols.

**ARCHAEOLOGICAL.**

- Annual Reports of the Archaeological Survey of India, complete,  
     5 vols.

**EDUCATION.**

- Report of the Commissioner for Education (U. S. A.) from  
     1886, 44 vols.

Bombay Properties  
OF THE  
Indian Institute of Science.

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REPORT  
OF THE  
BOARD OF MANAGEMENT  
WITH  
AUDITED STATEMENTS OF ACCOUNTS  
*for the period ending 31st March 1910.*

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Bombay :  
PRINTED AT THE "COMMERCIAL" PRINTING PRESS.  
1910.

**FIRST REPORT OF THE BOARD OF MANAGEMENT  
OF THE BOMBAY PROPERTIES OF THE INDIAN  
INSTITUTE OF SCIENCE FOR THE PERIOD  
1st JUNE 1909 TO 31st MARCH 1910.**

**Constitution of the Board.**

By Government Resolution No. 1119 dated 3rd June 1909, the Collector of Bombay and Mr. N. J. Gamudia were appointed as the representatives of Government on the Board in accordance with clause 12 of the Scheme of Management attached to the Vesting Order. Messrs. D. J. and R. J. Tata, by their letter dated 10th June 1909, nominated Mr. A. J. Bilmoria as their representative on the Board. During January and February 1910, Mr. P. J. Mead acted as Collector of Bombay, and took the place of Mr. G. W. Hatch on the Board. With this exception, no changes occurred in the constitution of the Board during the period under report.

**Meetings of the Board.**

2. The Board met for the first time on 23rd June 1909 with the Collector in the Chair. From July to October, one or two meetings were held in each month. Since November, the practice has been for the Board to meet regularly twice a month for the transaction of business.

**Properties under the management of the Board.**

3. The properties under the management of the Board are as shown in the accompanying Statement. In accordance with the sanctioned rents as they stood on the 31st March 1910, the gross annual rental of the properties is Rs. 2,20,045-8-0.

During the 10 months for which the properties were under

I.	Rents recovered up to 31st March ...	Rs. 1,56,311 13 4	the management of the Board, the rents recovered and realisable were as shown in the margin. The percentage on account of vacancies was 5·40 on gross realisable rental, and that on account of bad debts 0·39 on the rents realised.
II.	Rents recovered subsequently to 31st March ...	Rs. 16,290 10 8	
III.	Bad debts writ- ten off ...	Rs. 677 2 8	
IV.	Rents of vacan- cies ...	Rs. 9,905 0 0	
		<u>Rs. 1,83,184 10 8</u>	

### Substantial Alterations and Improvements.

4. A sum of Rs. 3,212-12-0 was expended on capital account during the period in carrying out sanitary improvements in Roosevelt House and in putting up an Electric Installation in some of the flats of Sandhurst House. Ordinary repairs, paid for out of the revenue, are not included in the above amount.

### Net Income of the Board.

5. The gross rents received (items I & II in para 3 above) amount to Rs. 1,72,602-8-0.

Outgoings were as shown in the margin, leaving a net revenue from the properties of

I.	Municipal Taxes, Insurance, &c. Rs.	25,578	10	4	Rs. 1,20,773-13-11. To this should
II.	Repairs ... "	11,039	5	2	be added a sum of Rs. 211-13-0
III.	Ground Rents "	4,107	15	6	which accrued on account of interest.
IV.	Expenses of Management	Rs.	11,102	11	From the net revenue, the following
		Rs.	51,828	10	amounts have been set aside for <i>viz.</i> :-

Ground Rent Fund ... ... Rs. 910 14 3

Building Sinking Fund ... .. 4,506 6 9

Repairs Fund ... ... .. 1,181 4 0

Electric Installation Renewal  
Fund ... ... .. , 1,712 8 0

Total Rs. 8,311 1 0

This leaves a balance of Rs. 1,12,674-9-11. Owing to the fact that no Ground Rent Fund has been in existence during the period that has elapsed since the dates of the leases of the 6 Port Trust lease-hold properties, the Board, acting on the advice of its Architect and Surveyor Mr. W. A. Chambers, decided to provide an Accumulated Ground Rent Fund for these properties. The amount required according to Mr. Chambers' calculations is Rs. 25,796-11-6. It has been decided to credit to the Accumulated Ground Rent Fund any surplus that remains over from the revenue of each year after payment to the Indian Institute of Science of a sum of Rs. 1,25,000 until such time as the whole sum of Rs. 25,796-11-6 has been set aside with interest @  $3\frac{1}{2}\%$ . In accordance with the above decision, a sum of Rs. 8,507-15-3 has been credited to the Accumulated Ground Rent Fund during the period under report.

**Payments to the Institute.**

6. Payments were made to the credit of the Council of the Institute with the National Bank of India, Bombay, as follows :—

Date.	Amount.				
1909.					
November 1st	...	...	Rs. 30,000	0	0
December 1st	...	...	10,000	0	0
" 13th	...	...	2,502	13	6
1910.					
January 4th	...	...	7,497	2	6
February 1st	...	...	10,000	0	0
" 11th	...	...	10,000	0	0
March 7th	...	...	10,000	0	0
" 11th	...	...	10,000	0	0
Total Rs....					90,000 0 0

After the close of the financial year, two payments of Rs. 10,000 and Rs. 4,166-10-8 respectively were made on 1st April and 6th June 1910, thus making up the total of Rs. 1,04,166-10-8 for the 10 months under report, being at the rate of Rs. 1,25,000 per annum.

**Survey of Properties.**

7. The survey of the properties required by clause 41 of the Scheme of Management was not made until after the close of the year ending 31st March 1910.

**Audit of Accounts.**

8. Under the orders of Government contained in their letter No. 808 dated 29th April 1910, the Accountant General was directed to audit the Board's accounts. The audited accounts of the Board for the 10 months ending 31st March 1910 are attached.

G. W. HATCH,

*Chairman of the Board.*

Bombay, 12th July 1910.

BOMBAY PROPERTIES  
OF THE  
INDIAN INSTITUTE OF SCIENCE.

SCHEDULE OF RENTS.

*As on 31st March 1910.*

No.	Property.	Gross Monthly Rent.
1.	Albert Buildings ...	Rs 2,550 3 4
2.	Gymkhana Chambers ... ,,	2,102 0 0
3.	Victoria Buildings ... ,,	735 0 0
4.	Albion Place ... ,,	840 0 0
5.	Alexandra Terrace ... ,,	2,016 0 0
6.	Jubilee Buildings ... ,,	848 0 0
7.	Reay House ... ,,	995 0 0
8.	Sandhurst House ... ,,	915 0 0
9.	Roosevelt House ... ,,	914 0 0
10.	Sargent House ... ,,	1,620 0 0
11.	Jenkins House ... ,,	1,515 0 0
12.	Station Terraces ... ,,	1,753 0 0
13.	Candy House ... ,,	860 0 0
14.	Land near Jubilee Buildings. ,,	205 13 4
15.	" " Albion Place and Alexandra Terrace. ,,	330 6 8
16.	" at Parel Tank Road (Wagheshri Hill) ... ,,	137 10 8
Total Monthly Rent ...		Rs. 18,337 2 0 × 12
Total Gross Annual Rent ...		Rs. 2,20,045 8 0

**BOMBAY PROPERTIES OF**  
**Dr.** *General Balance Sheet*

LIABILITIES.

	Rs.	a. p.	Rs.	a. p.
<b>II.—Debts &amp; Liabilities :—</b>				
Adjusting Account ... ...			16,635	11 7
<b>VI.—Reserve Funds :—</b>				
(a) Buildings Sinking Fund ...	4,506	6 9		
(b) Ground Rent Fund ... Rs. 5,018 13 9				
<i>Less, Paid for the period ... „ 4,107 15 6</i>	910	14 3		
(c) Repairs Fund ... Rs. 12,220 9 2				
<i>Less, Spent during the period. „ 11,039 5 2</i>	1,181	4 0		
(d) Sinking Fund for the replacement of Electric Installations ... ...	1,712	8 0		
(e) Ground Rent Arrears Fund ...	8,507	15 3	16,819	0 3
Total Rupees...			33,454	11 10

Examined and found correct.

L. B. WARD,  
*Examiner, Local Fund Accounts.*

OFFICE OF THE ACCOUNTANT GENERAL,  
*Bombay, 10th June 1910.*

# THE INDIAN INSTITUTE OF SCIENCE.

*from 1st June 1909 to 31st March 1910.*

Cr.

## ASSETS.

		Rs.	a. p.		Rs.	a. p.
<b>III.—Immoveable Property New :—</b>						
Electric Installation ... ...		1,075	0 0			
Construction (New) ... ...		1,816	0 0			
<b>Moveable Property :—</b>						
Electric Fittings ... ...					321	12 0
<b>IV.—Debts owing to the Board :—</b>						
(a) Suspense Account ... ...		854	14 6			
(b) Outstanding Rent Bills ...		16,290	10 8			
<b>V.—Cash and Investment :—</b>					17,145	9 2
With the National Bank of India,						
Ld.—Account Current ... ...		11,921	12 6			
On hand ... ... ...		1,174	10 2			
Total Rupees...					13,096	6 8
					33,454	11 10

G. W. HATCH,  
*President.*

P. J. BILIMORIA,  
*Secretary.*

## BOMBAY PROPERTIES OF

Dr.

Revenue Account from

		Rs.	a.	p.	Rs.	a.	p.
To Office Expenses	... ... ...				7,550	7	4
„ Stationery, Printing and Advertising Charges	... ... ...				665	3	9
„ Board's Fees	... ... ...				1,500	0	0
„ Architect's Fees	... ... ...				755	0	0
„ Estates General Expenses	... ...				632	0	0
„ Reserve Funds :—							
TRANSFERRED AS UNDER :—							
Buildings Sinking Fund for the year	... ... ...	4,506	6	9			
Repairs Fund for 10 months	...	12,220	9	2			
Ground Rent Fund for 10 months	... ... ...	5,018	13	9			
Sinking Fund for the replacement of Electric Installations for 10 months	... ...	1,712	8	0	23,458	5	8
„ BALANCE (Net Income)	... ...				1,12,674	9	11
Total Rupees...					1,47,235	10	8

Examined and found correct.

L. B. WARD,  
*Examiner, Local Fund Accounts.*

OFFICE OF THE ACCOUNTANT GENERAL,

Bombay, 10th June 1910.

**THE INDIAN INSTITUTE OF SCIENCE.***1st June 1909 to 31st March 1910.***Cr.**

By Net Rents derived from the following estates :—	Rs.	a. p.	Rs.	a. p.
Albert Buildings ...	21,287	8 6		
Gymkhana Chambers ...	14,608	12 7		
Victoria Buildings ...	6,161	4 3		
Albion Place ...	6,880	12 2		
Alexandra Terrace ...	15,318	15 7		
Jubilee Buildings ...	7,001	1 4		
Reay House ...	8,723	9 3		
Sandhurst House ...	7,490	13 3		
Roosevelt House ...	7,609	4 3		
Sargent House ...	12,176	2 9		
Jenkins House ...	12,433	13 11		
Station Terraces ...	14,680	15 11		
Candy House ...	5,911	9 3		
Land near Jubilee Buildings ...	2,058	5 4		
" " Albion Place and Alexandra Terrace ...	3,304	2 8		
Land at Parel Tank Road (Wagheshri Hill) ...	1,376	10 8		
" Interest ...			1,47,023	13 8
			211	13 0
Total Rupees ...				
			1,47,235	10 8

**G. W. HATCH,***President.***P. J. BILIMORIA,***Secretary.*

**BOMBAY PROPERTIES OF**  
**Dr.** *Appropriation Account showing*

	Rs.	a.	p.	Rs.	a.	p.
To Indian Institute of Science for 10 months at Rs. 1,25,000 per year ...				1,04,166	10	8
„ Surplus transferred to Ground Rent Arrears Fund Account as per Board's Resolution No. 3 of 23rd May, 1910 ... ...				8,507	15	3
Total Rupees...				1,12,674	9	11

Examined and found correct.

L. B. WARD,

*Examiner, Local Fund Accounts.*

OFFICE OF THE ACCOUNTANT GENERAL,

*Bombay, 10th June 1910.*

**THE INDIAN INSTITUTE OF SCIENCE.***the disposal of Net Revenue.***Cr.**

	Rs.	a.p.	Rs.	a.p.
By Net Revenue as per Revenue Account      ...      ...      ...			1,12,674	9 II
Total Rupees...			1,12,674	9 II

G. W. HATCH,

*President.*

P. J. BILIMORIA,

*Secretary.*